

Massachusetts Avenue Bus Priority Pilot

Public Meeting

May 16, 2018

Meeting Overview

- Introductions and Welcome
- What is Bus Rapid Transit?
- Transit Signal Priority
- Questions and Answers
- Wrap Up



Massachusetts Bay
Transportation Authority



ITDP
Institute for Transportation
& Development Policy



Arlington BRT Bus Priority Pilot Project

Barr Foundation provided Arlington a planning and pilot implementation grant to enhance bus service and pilot bus priority through the Mass Ave corridor. Town will test interventions to help improve traffic flow, reduce travel time, and increase reliability.

Pilot

- No construction; cones, signal changes, signs, education and enforcement
- One month during morning commute eastbound - intended to test and evaluate

Proposed features

- Mass Ave Eastbound - evaluating from Lake Street to Alewife Brook Parkway (ABP)
- Mass Ave - evaluating signal priority from Mystic Street to ABP
- Bus queue jump lanes - evaluating at 15 intersections along Mass Ave
- Bus stop relocations - evaluating from Lake Street to ABP



Outreach / Implementation / Evaluation Timeline

April-June: Field Work and Data Collection, including stakeholder meetings

May 16: **BRT Educational Forum**

June-August: Corridor Scenario Development (Conceptual Design of Dedicated Bus Lane, Queue Jumps, Bus Stop Relocation and Related Improvements)

August-September: Implementation (finalize design and prepare for implementation, engage street teams)

August 15: **Alternative Scenarios Forum**

October: Bus Optimization Pilot

November-December: Pilot Evaluation

November 12: Tentative date for Final Forum

May-October: Stakeholder Meetings in East Arlington



What is Bus Rapid Transit?

Julia Wallerce, ITDP North America (Boston)





ITDP

Institute for Transportation
& Development Policy

Promoting equitable and sustainable
transportation worldwide





Using road space efficiently

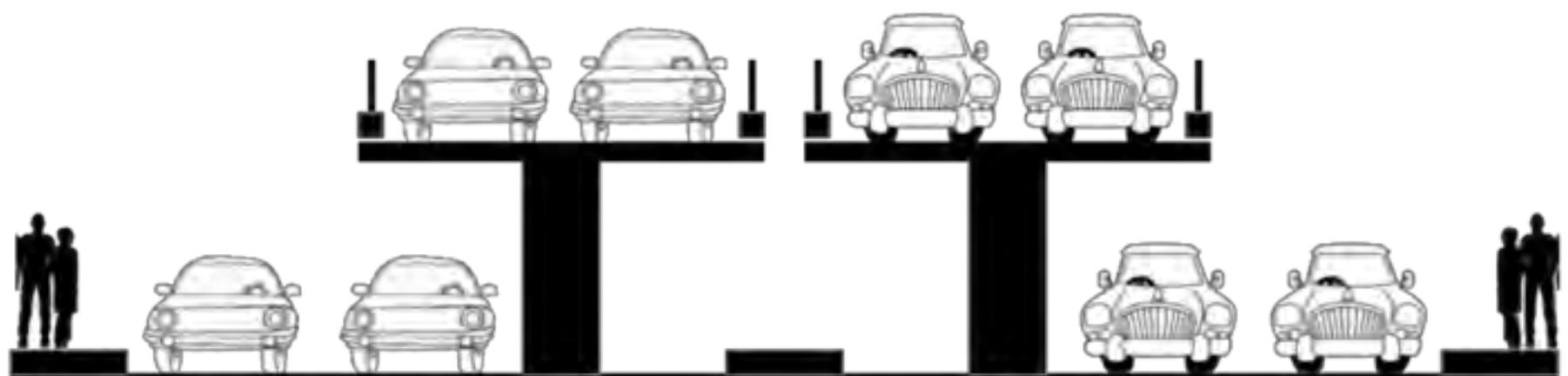
3-lane carriageway



Passenger capacity:

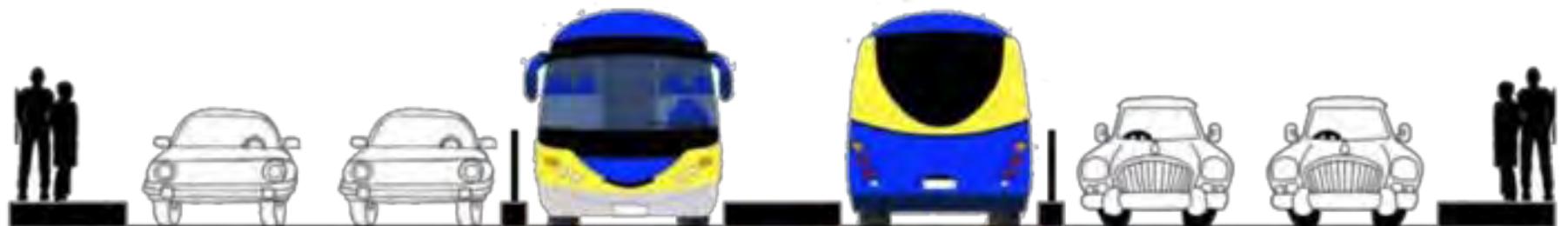
3,000 passengers per hour per direction

2 lanes + elevated road



4,700

Dedicated lanes for bus rapid transit

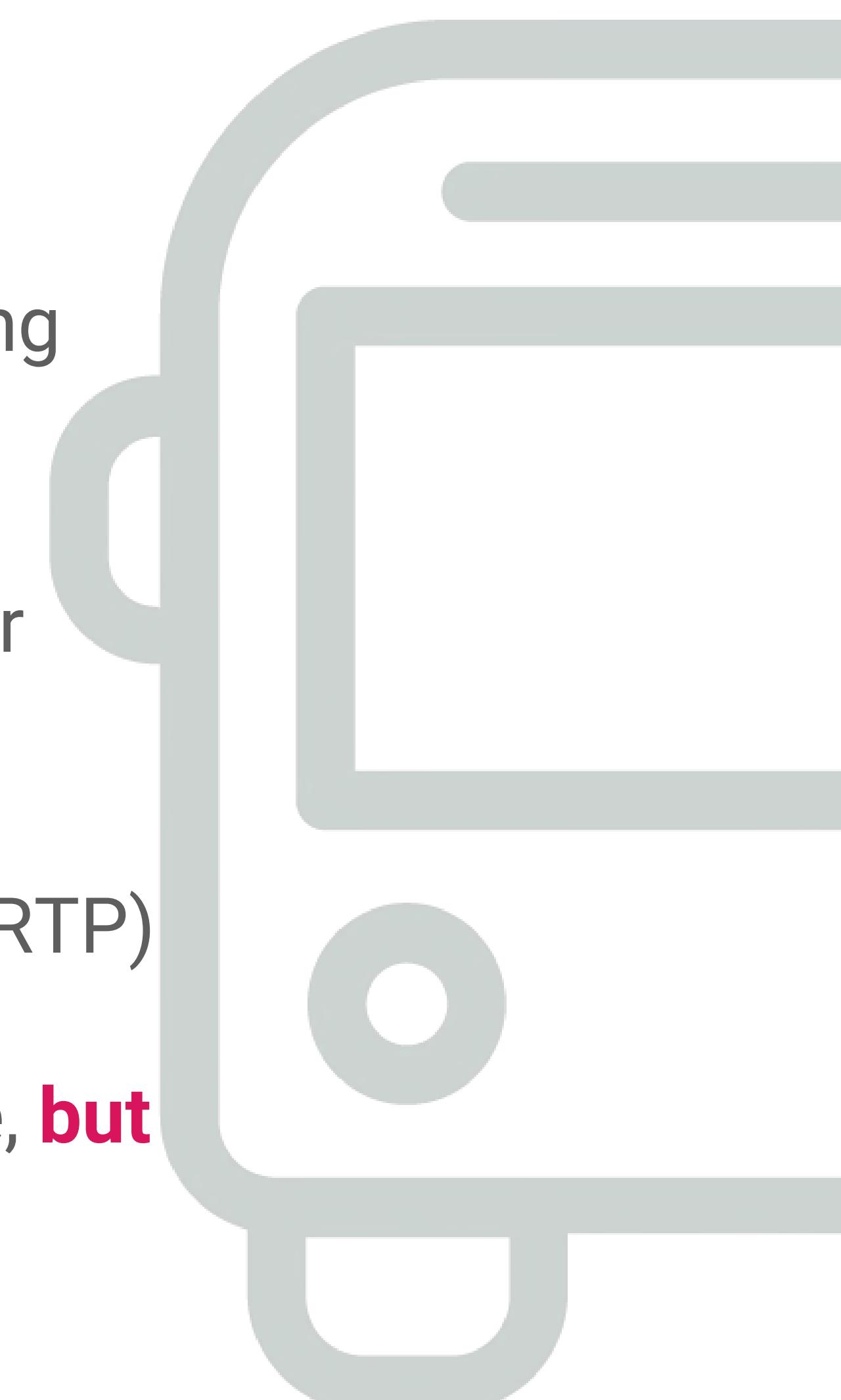


12,000+

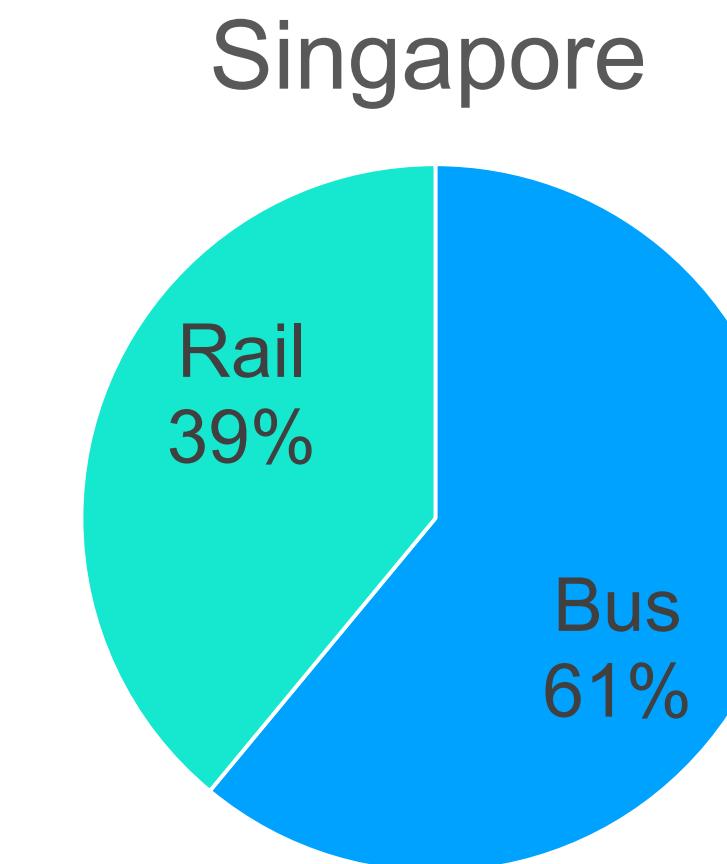
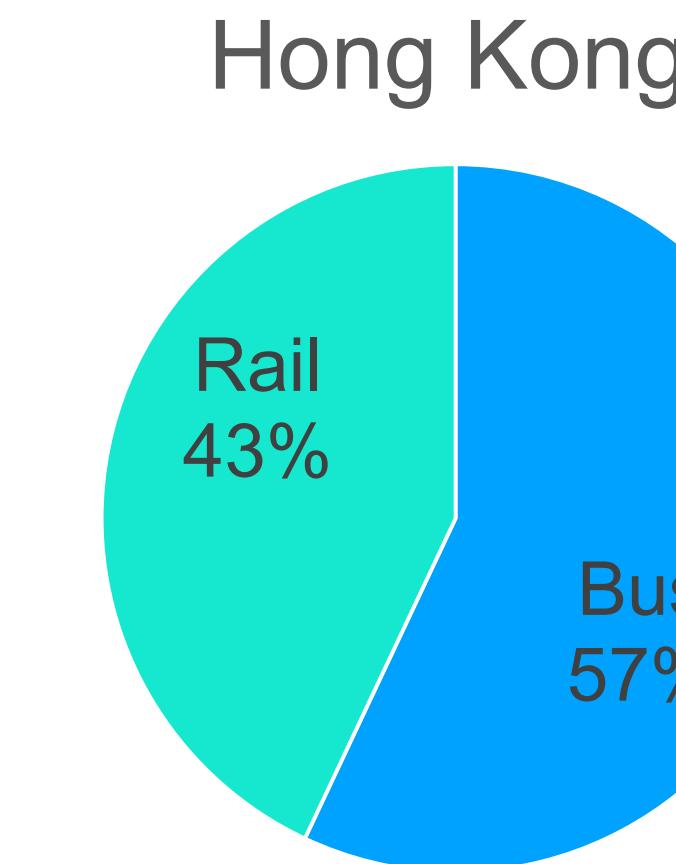
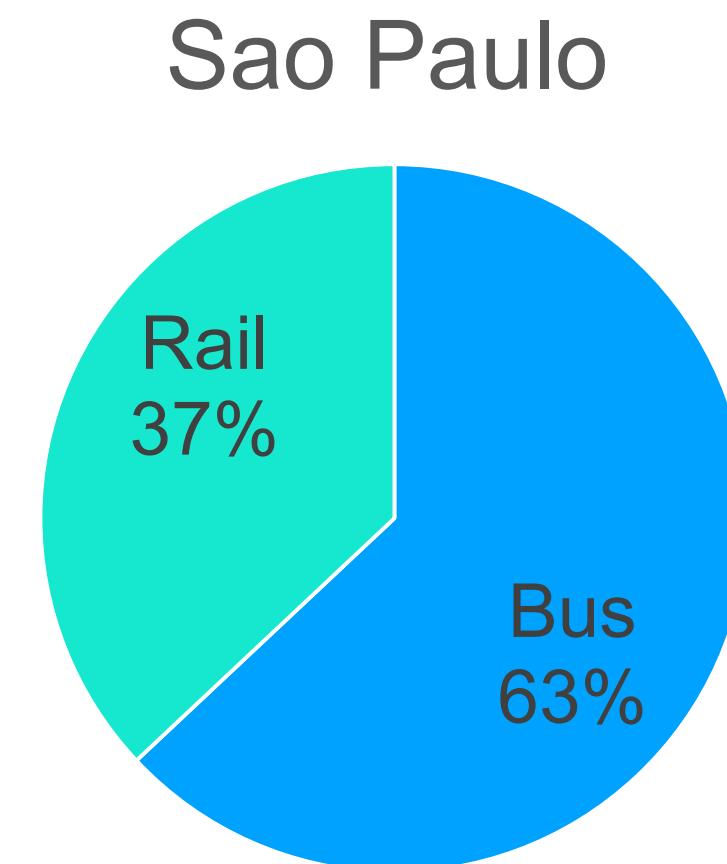
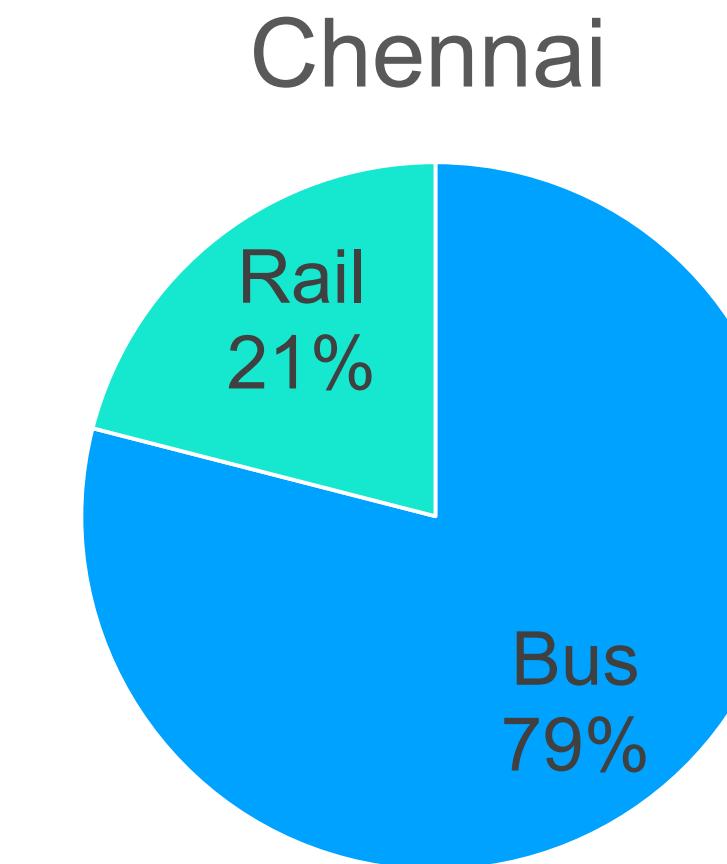
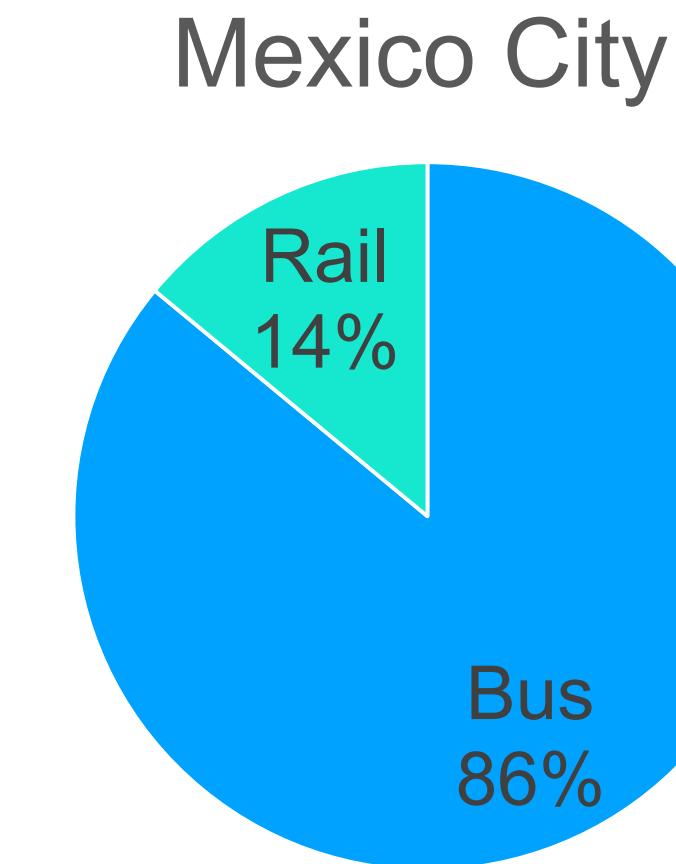
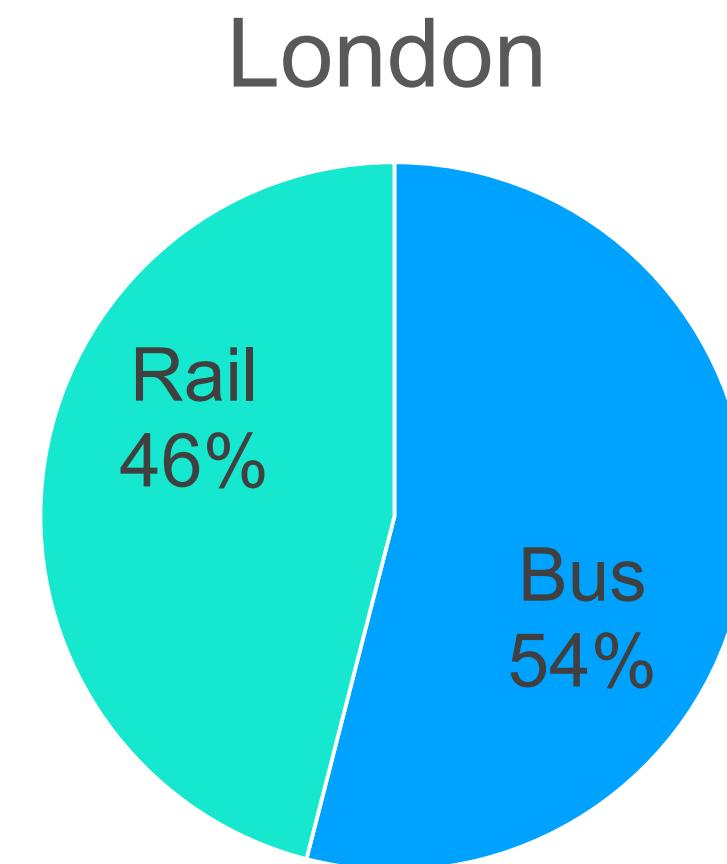


Why Buses for Boston?

- The region is growing economically and regional traffic is increasing
- Public transit is the most efficient way to capture and serve that growth in a sustainable way, reduce congestion, relieve demand for parking
- A 30% increase in transit trips in the region is predicted by 2035 (LRTP)
- Bus service is the “easiest” to expand and is the most local service, **but suffers from significant delay and reliability challenges**



Buses carry most public transport trips, even in cities with large rail networks

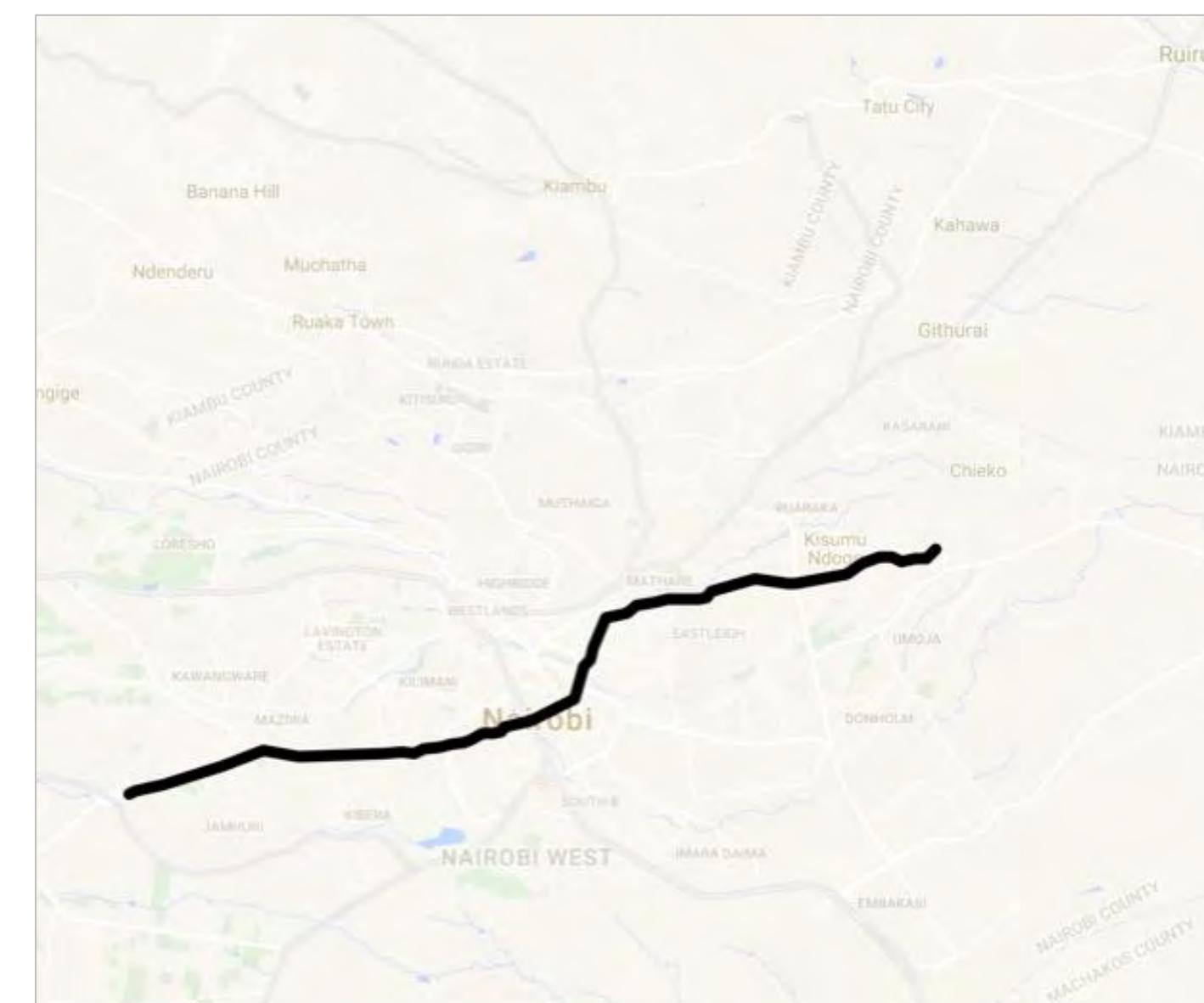


What can be built with \$1 billion?

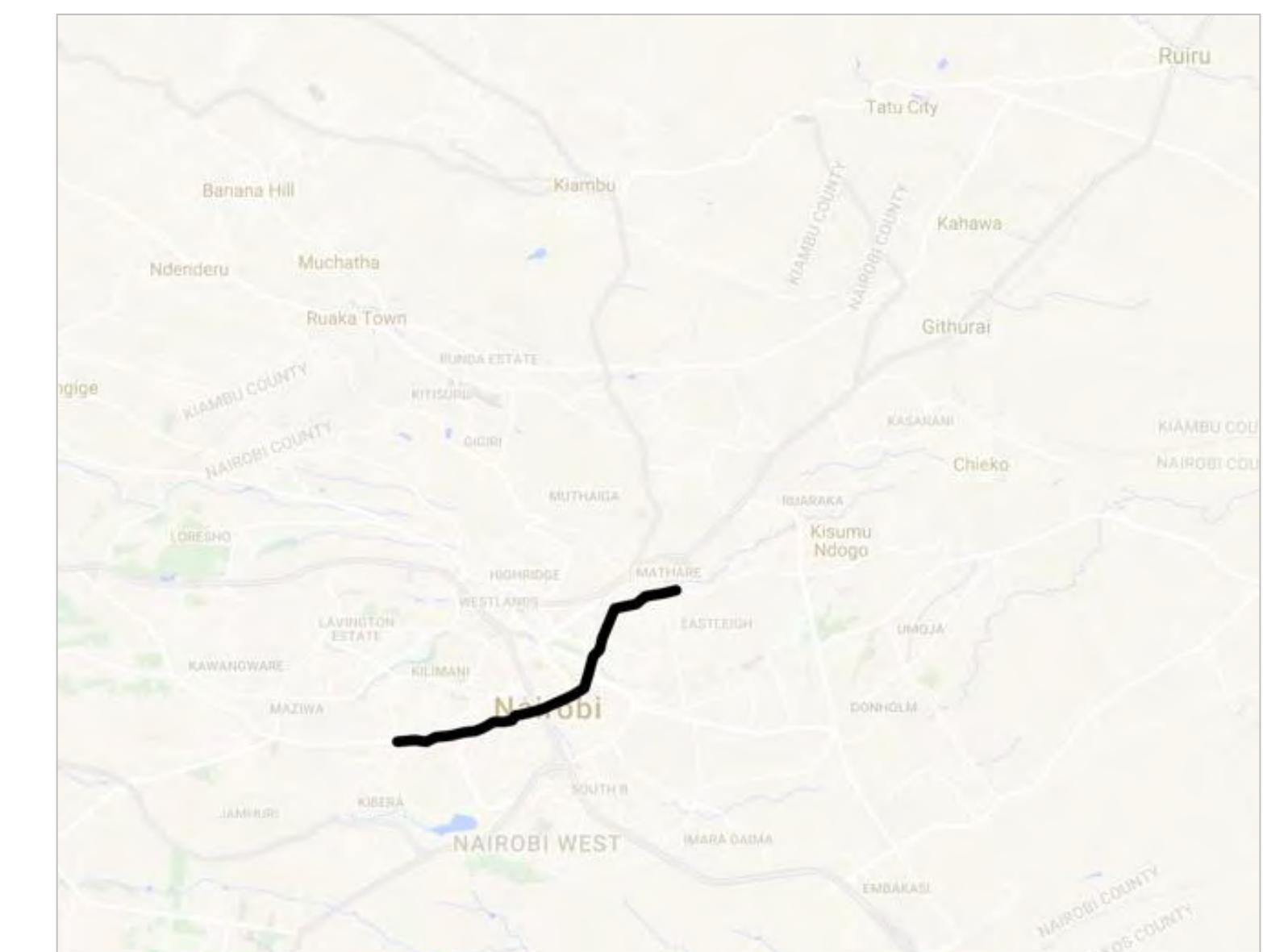
Average construction cost in 2013 USD from a sample of 146 rapid transit projects



86 km of BRT



22 km of LRT

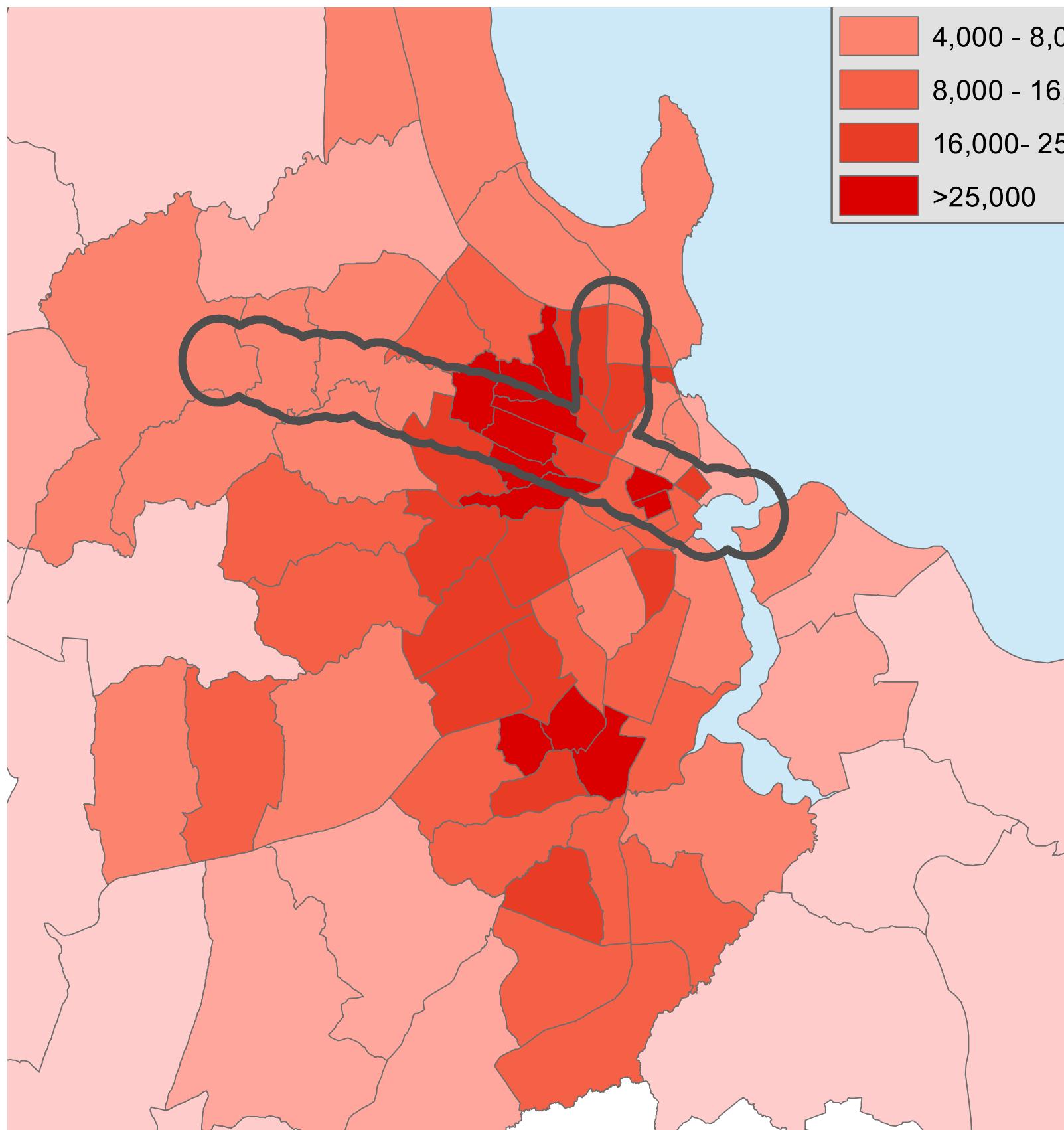


9 km of metro

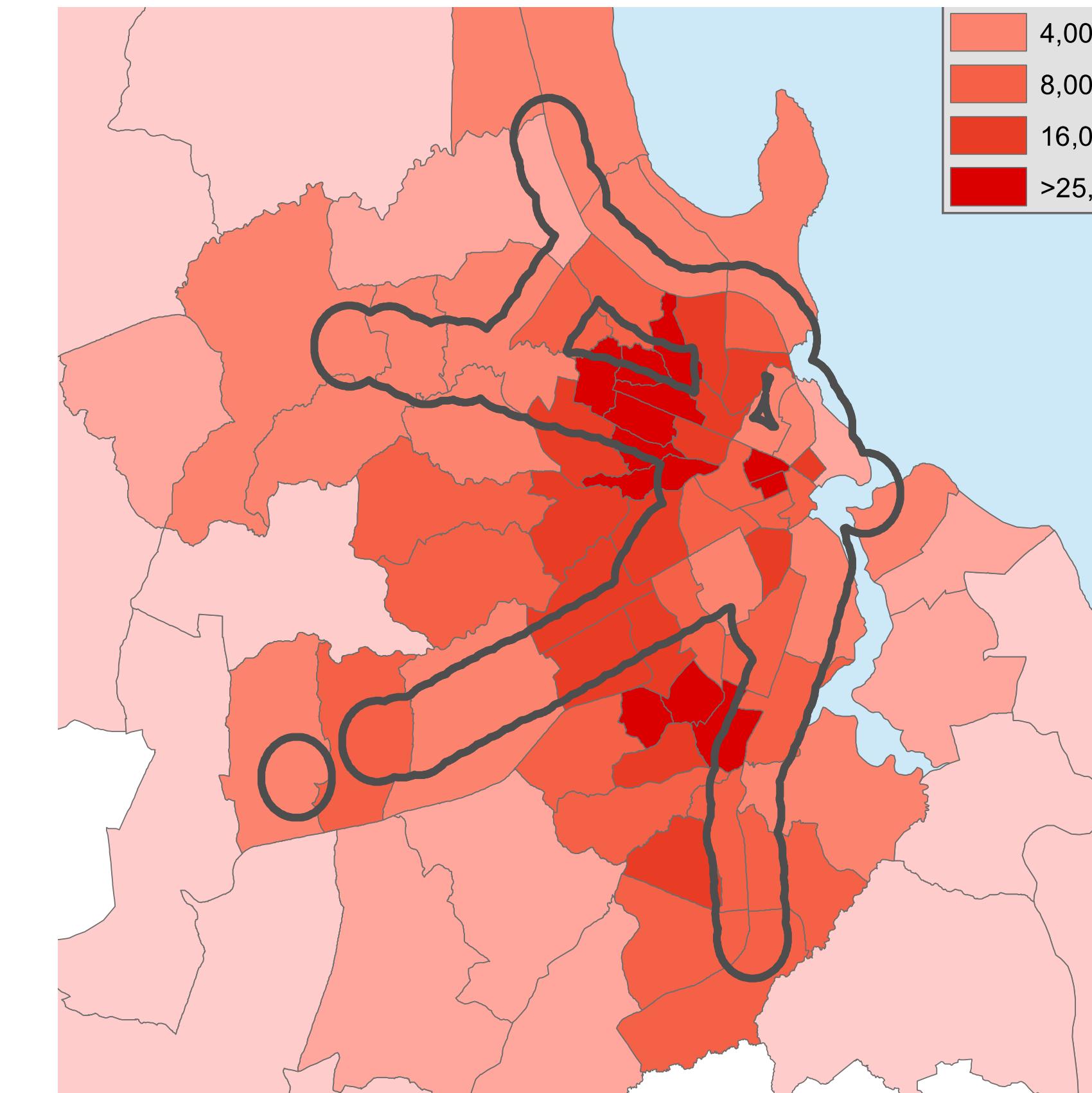
DART BRT, Dar es Salaam: 21 km phase 1 network



Rapid transit coverage in Dar es Salaam



After BRT phase 1
8% of residents near
rapid transit



After BRT phases 1-4
33% of residents near
rapid transit

Bus Rapid Transit

- High capacity
- High speed
- Customer oriented
- Not an old bus running in a bus lane!



Bus Rapid Transit

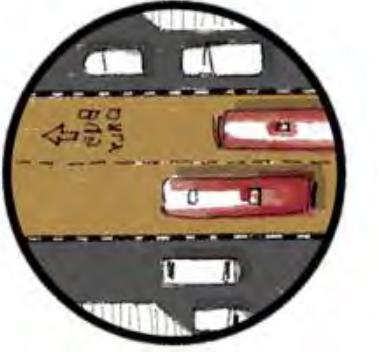
The only solution is public transport, not just for those with lower incomes, but for everybody.



The BRT Basics



Dedicated right-of-way



Busway alignment



Platform-level boarding



Off-board fare collection

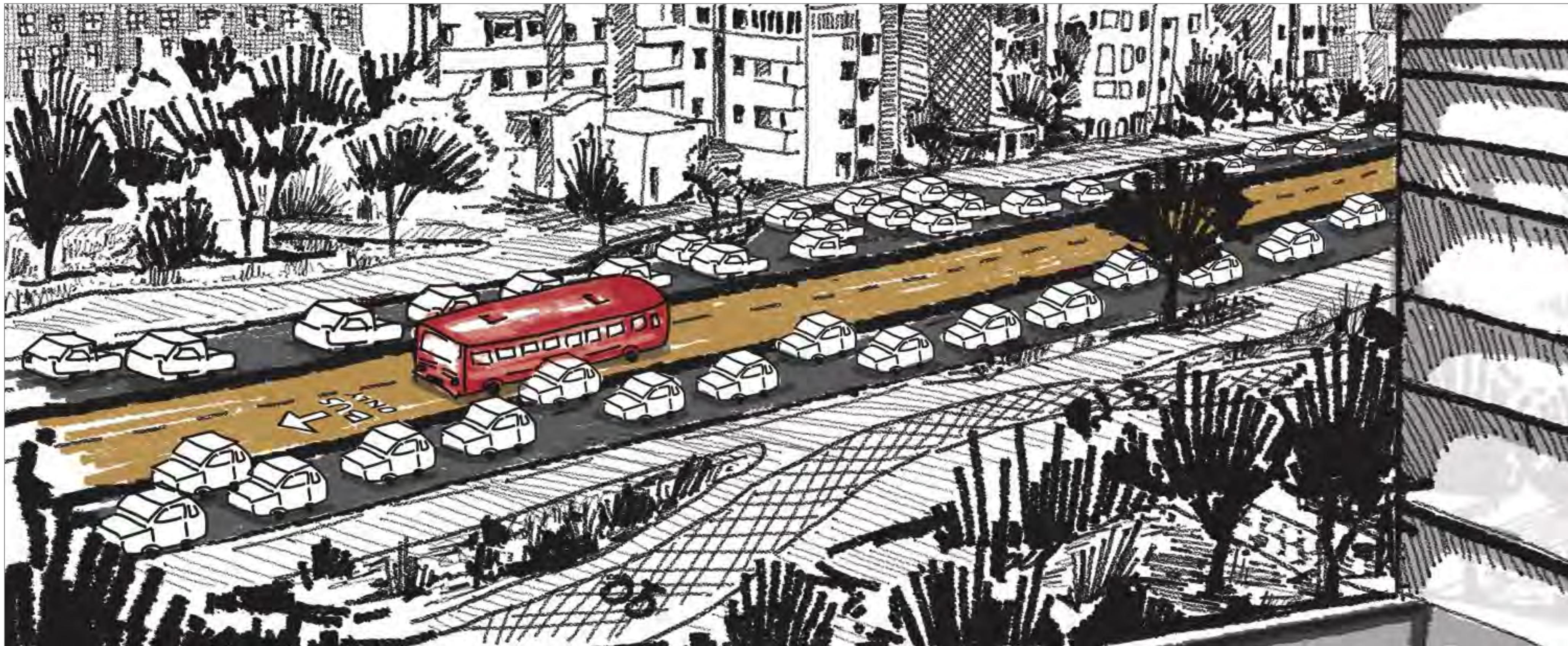


Intersection treatments



1

BRT Basics: Dedicated right-of-way



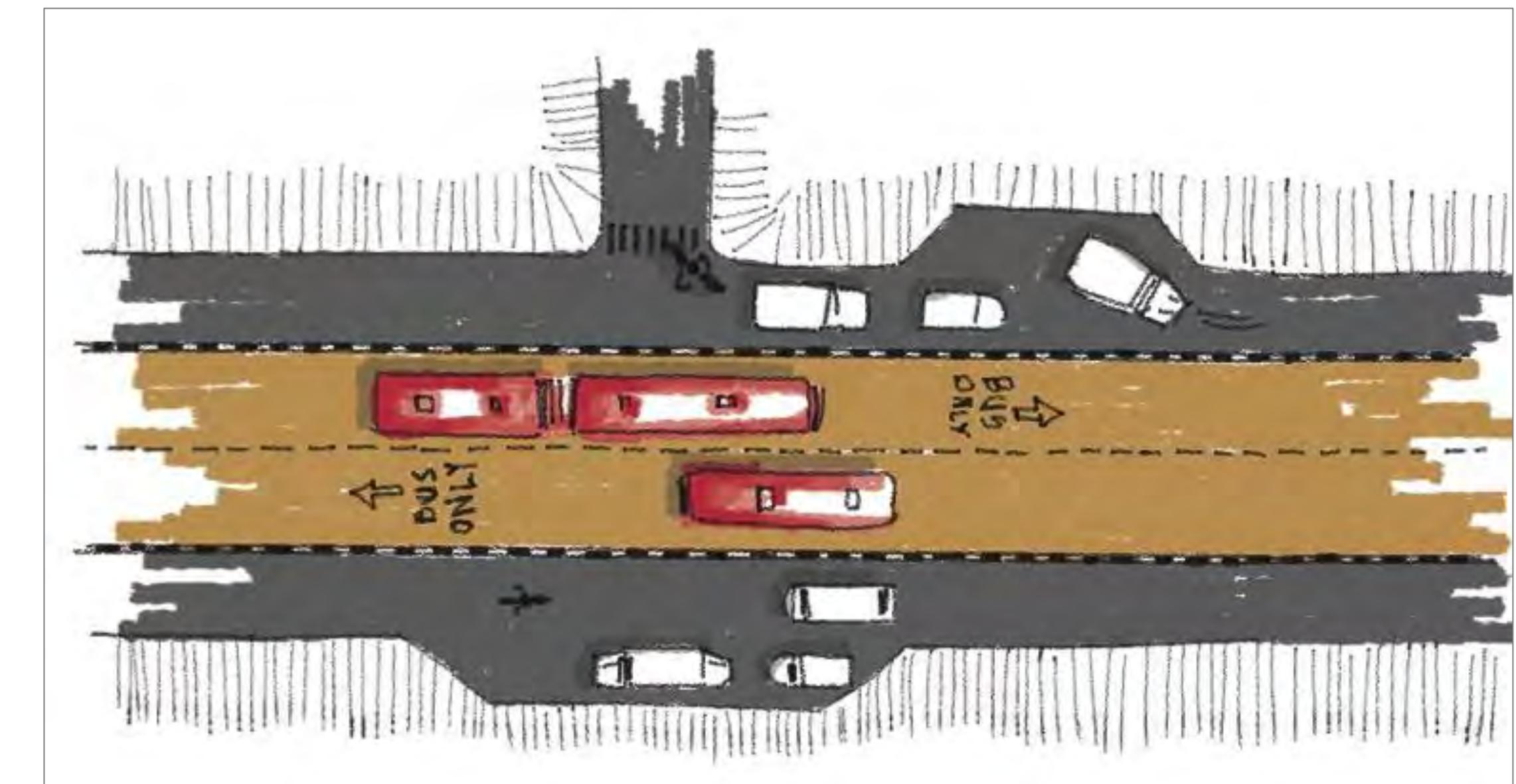
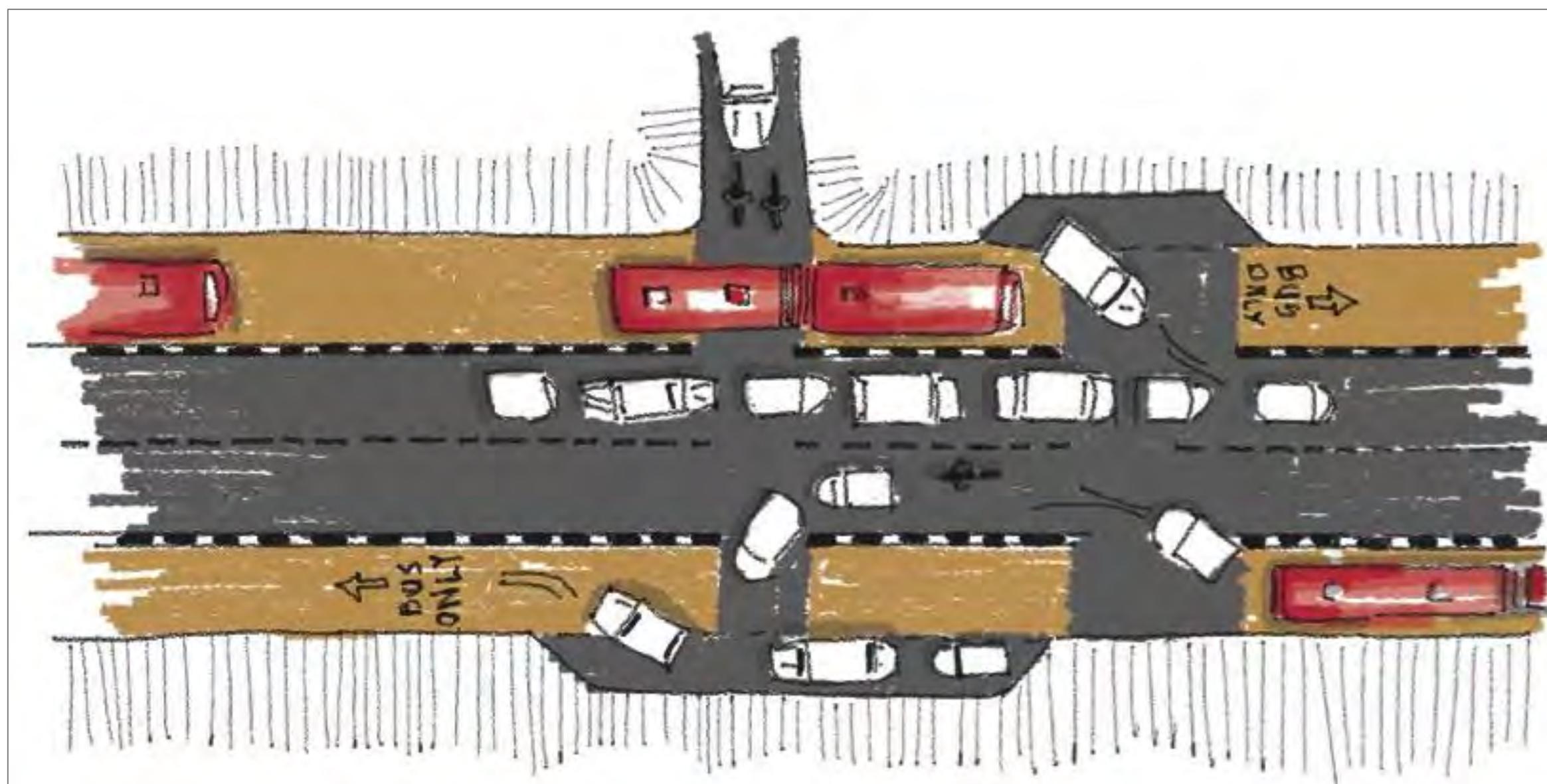
Dedicated right-of-way

Dedicated BRT lanes are critical to system speed & capacity



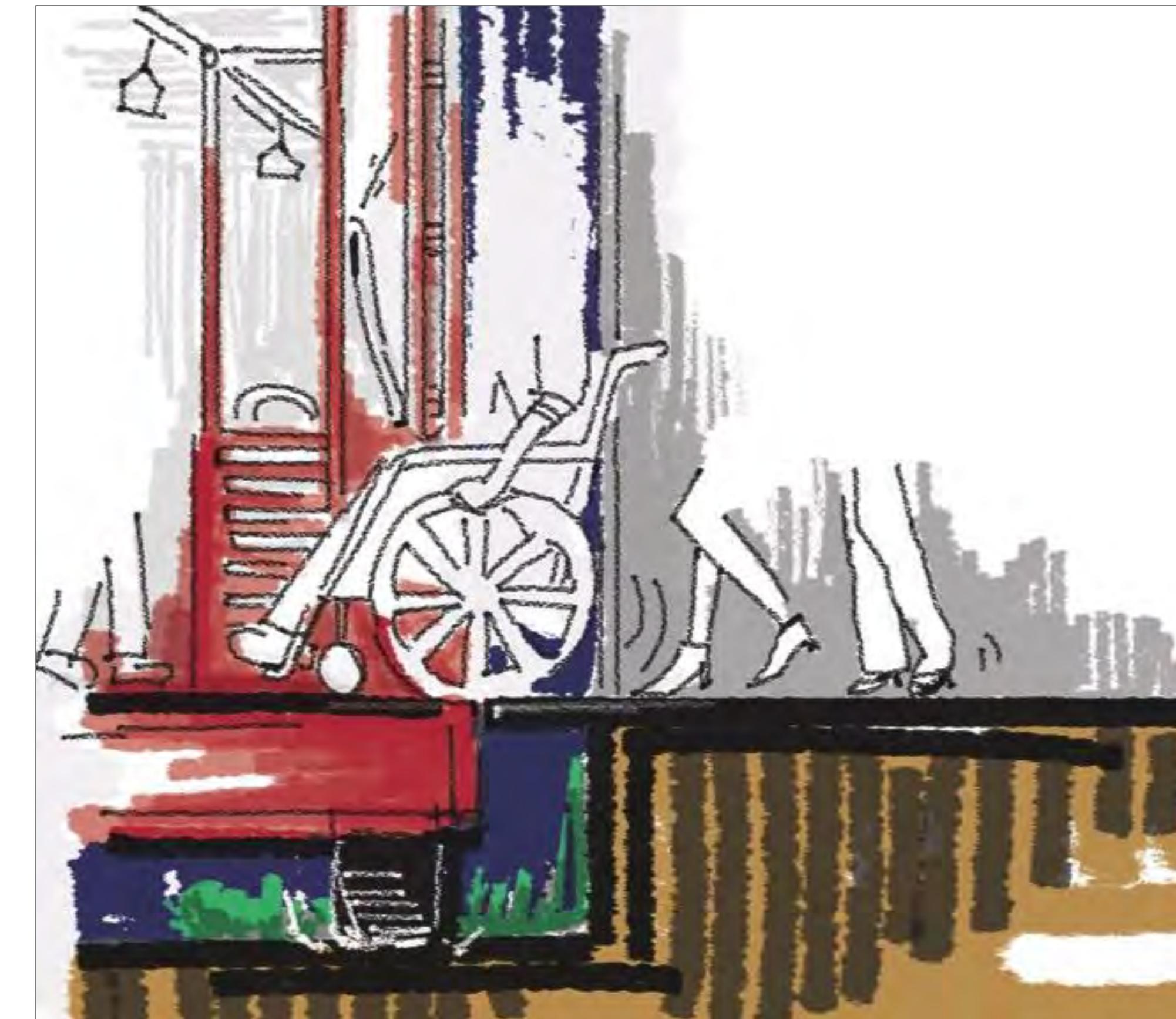
2

BRT Basics: Busway alignment



3

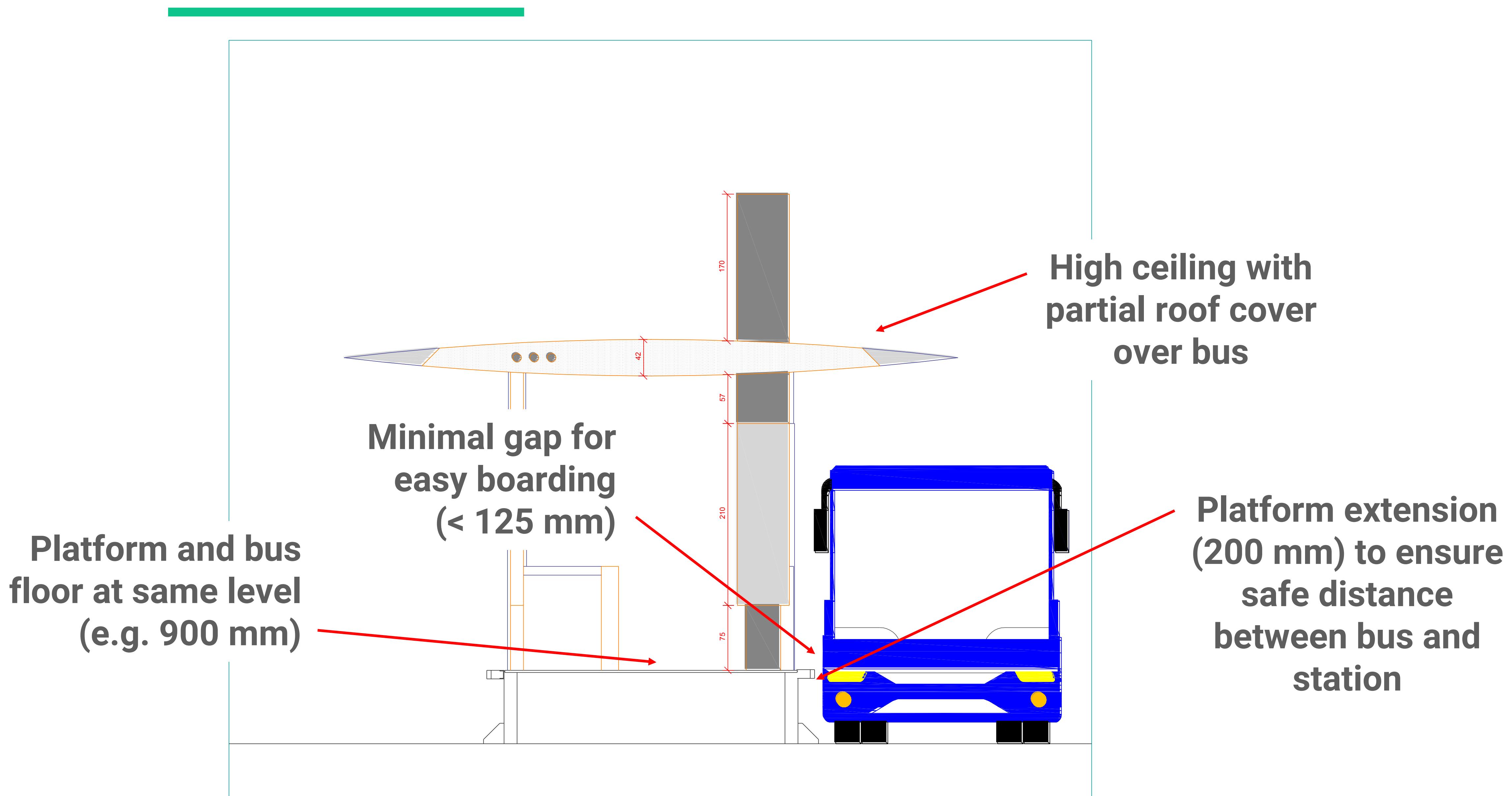
BRT Basics: Platform-level Boarding



Platform-level boarding at stations



Station-bus interface

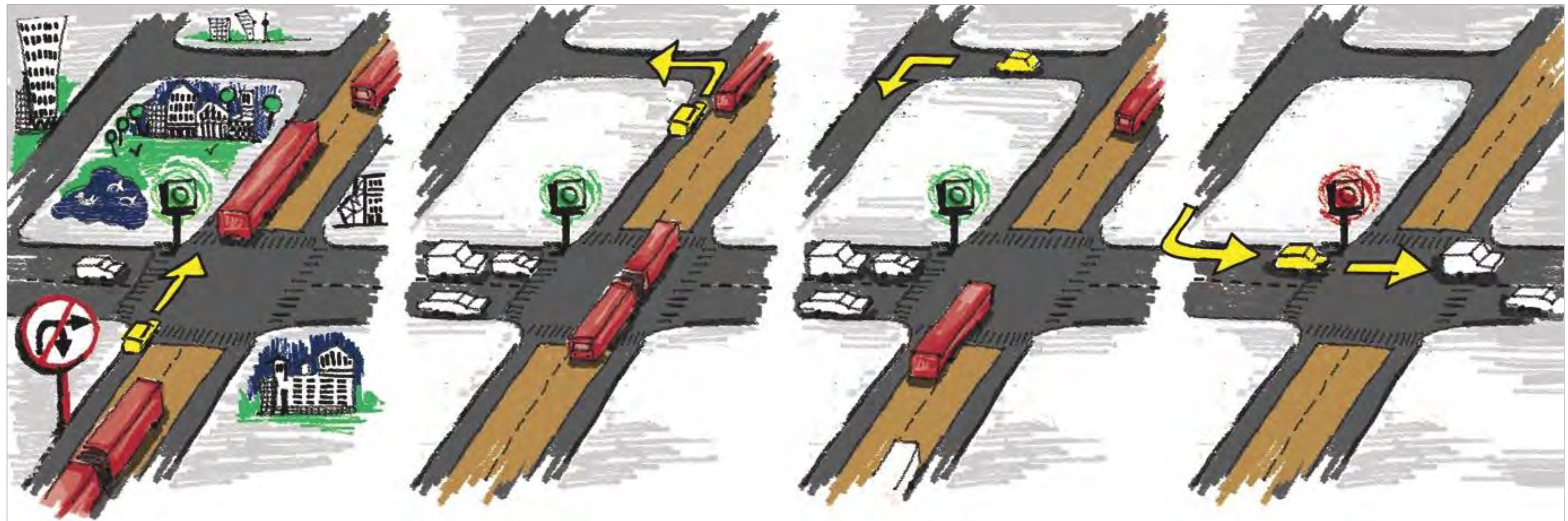


BRT Basics: Off-board fare



5

BRT Basics: Intersection treatments



Summary: the BRT Basics

- ✓ Dedicated right-of-way
- ✓ Busway alignment
- ✓ Off-board fare collection
- ✓ Intersection treatments
- ✓ Platform-level boarding



Passenger Access

Good walking and cycling facilities to access the BRT system



Compact transit-oriented development



The BRT Standard



Gold: 85 points or above



Silver: 70–84 points



Bronze: 50–69 points

BRT in the U.S.



Health Connector, Cleveland, OH



Orange Line, Los Angeles, CA



CT Fast Track, Hartford, CT

Boston BRT Local Pilots 2018: Spotlight on Arlington, Cambridge, Watertown & Everett

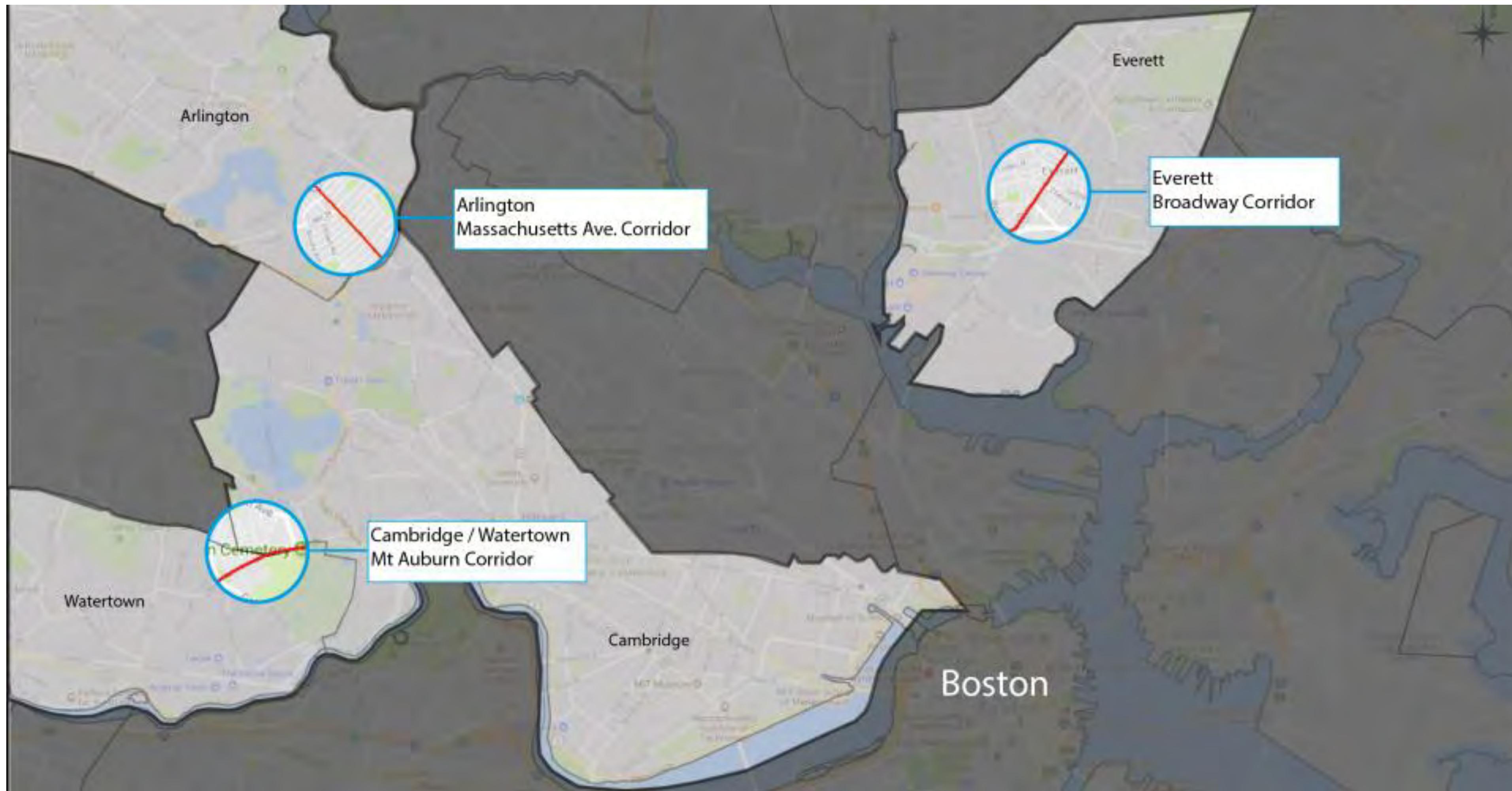


Boston BRT

- An initiative developed in 2013 as part of the Barr Foundation's Climate program
- RFP for local pilots grants in early 2017 (up to \$100,000 each) to demonstrate elements of BRT along high ridership corridors



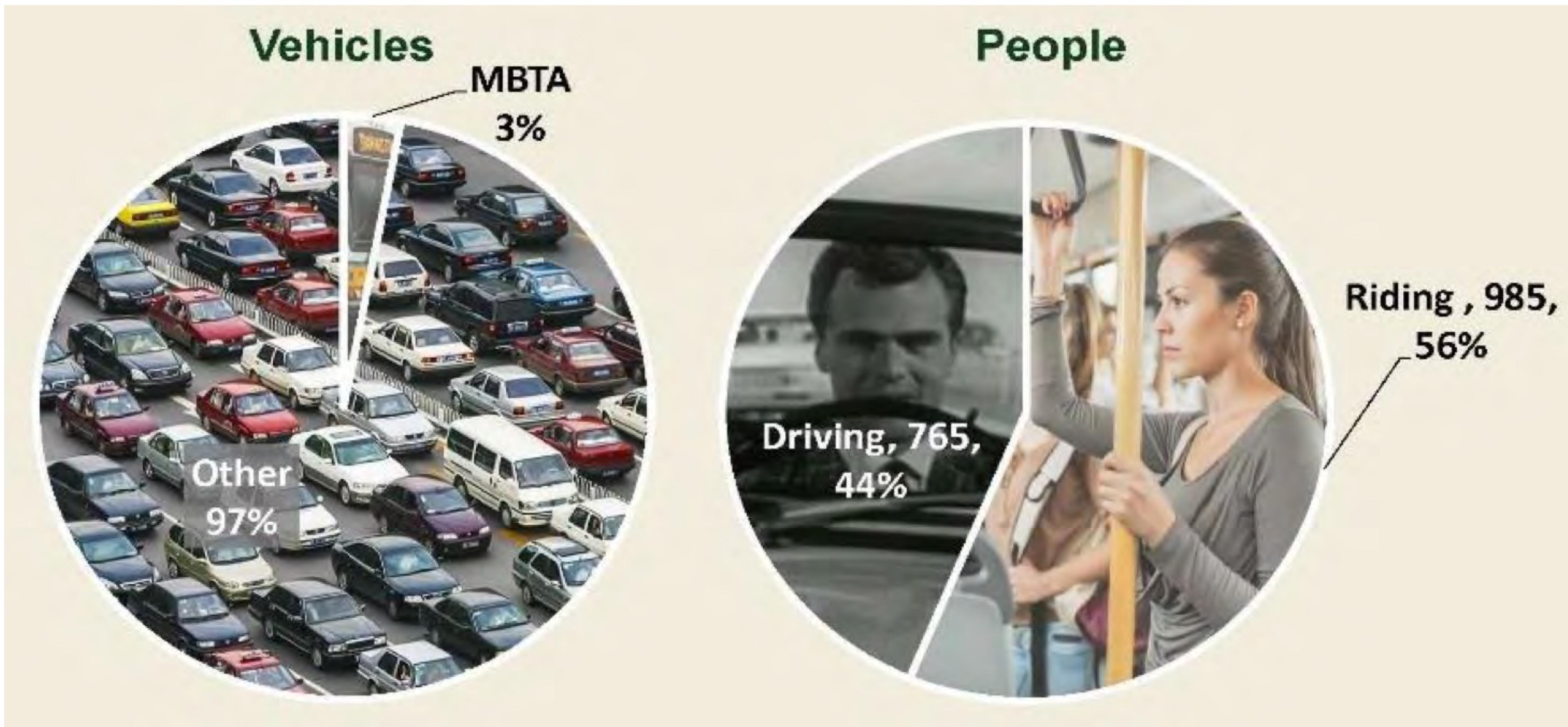
2018 Boston BRT Pilots



*Complete corridors not circled in Cambridge/Watertown

Brattle St. to Coolidge Ave. (AM Peak)

Vehicle Volumes vs. People Volumes on Mt. Auburn St. between Brattle Street and Coolidge Avenue



(Source: DCR Public Presentation, January 10, 2016, Slide 70)

<http://www.mass.gov/eea/agencies/dcr/conservation/planning-and-resource-protection/projects/mount-auburn-street-corridor-study.html>

Consultant/Technical Support Team

- ITDP: Julia Wallerce (Boston) & Michael Kodransky (NYC)
 - Project coordination, technical assistance
- Stantec: Ralph DeNisco (formerly Nelson\Nygaard)
 - Technical assistance, analysis
- Denterlein: Katherine Adams, Jayda Leter-Luis
 - Communications, media, PR
- Ad Hoc Industries: Adrian Gill
 - Branding, messaging, graphics

Bus Priority Pilots on the rise in Boston

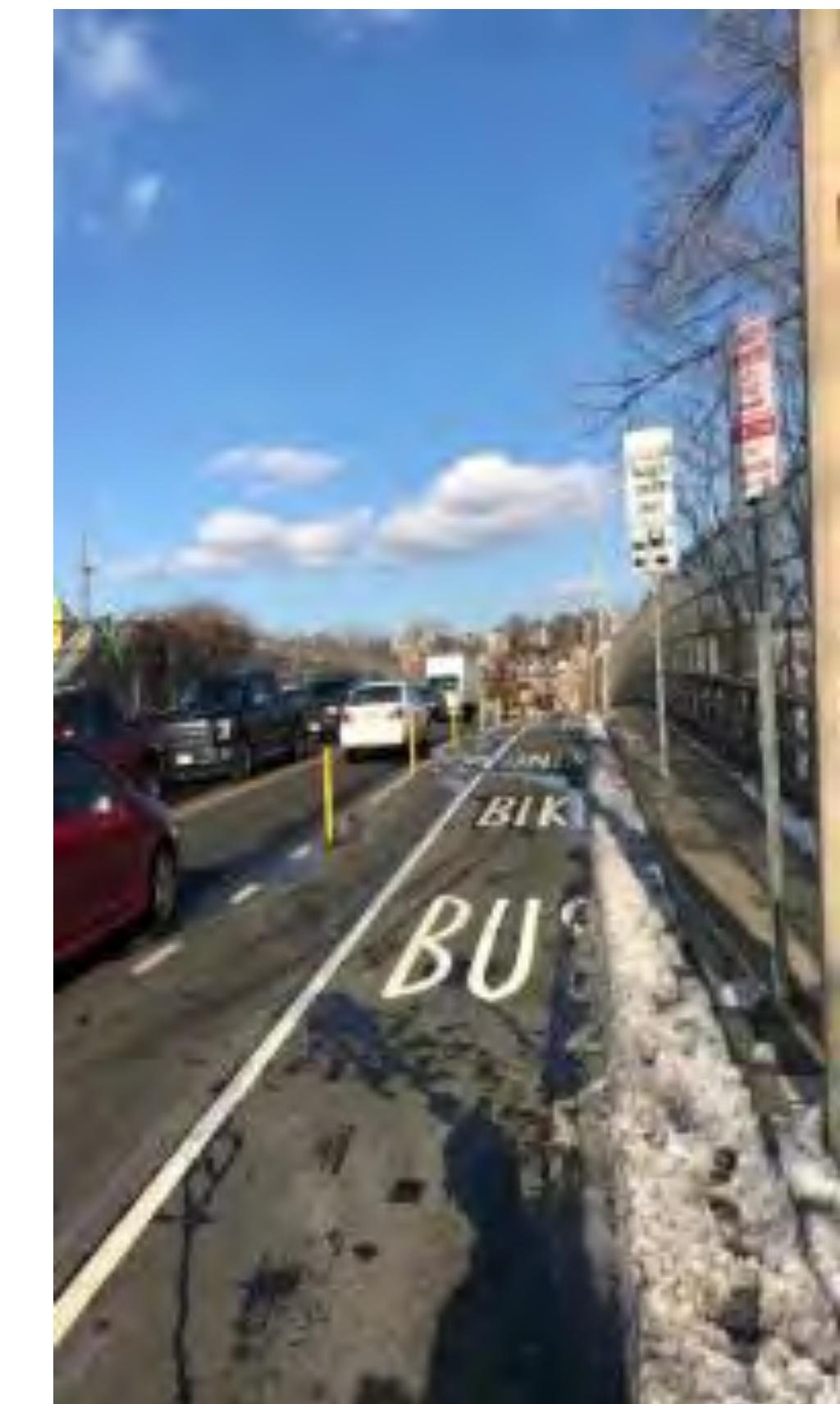
**Roslindale Pilot
(Washington St)**



**Everett Bus Only
Lane (Broadway)**



**Somerville Pilot
(Prospect St)**





**How do we measure our success?
Lessons learned?**

Ralph DeNisco, Stantec

Why Bus Improvements Matter

MBTA Website – This Morning

Route 77



Delay: Route 77 experiencing 20-25 minute delays due to traffic

 **VIEW**

[Schedule](#)

Info and Maps

Direction of your trip:
[Inbound → Harvard](#)



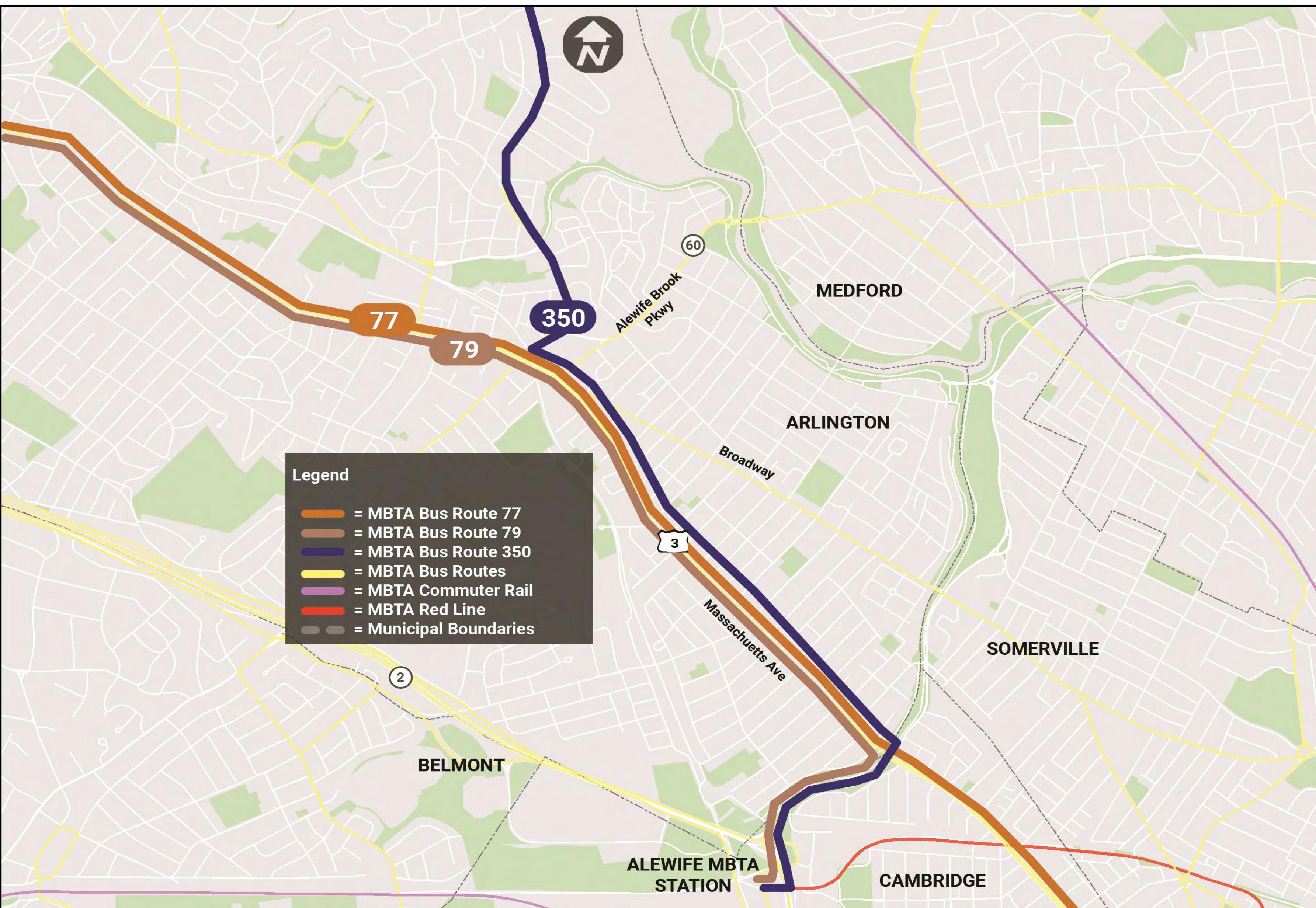
Route Variation:
→ [Harvard Station via Mass. Ave.](#)



Source: [MBTA Website](#), 05/16/18, 9:50am

Arlington – MBTA Frequency

Route 77 – Arlington Heights – Harvard Station
Route 79 – Arlington Heights – Alewife Station
Route 350 – North Burlington – Alewife Station



Route 77

Peak: 8 min
Off-Peak: 12 min

Route 79

Peak: 20 min
Off-Peak: 45 min

Route 350

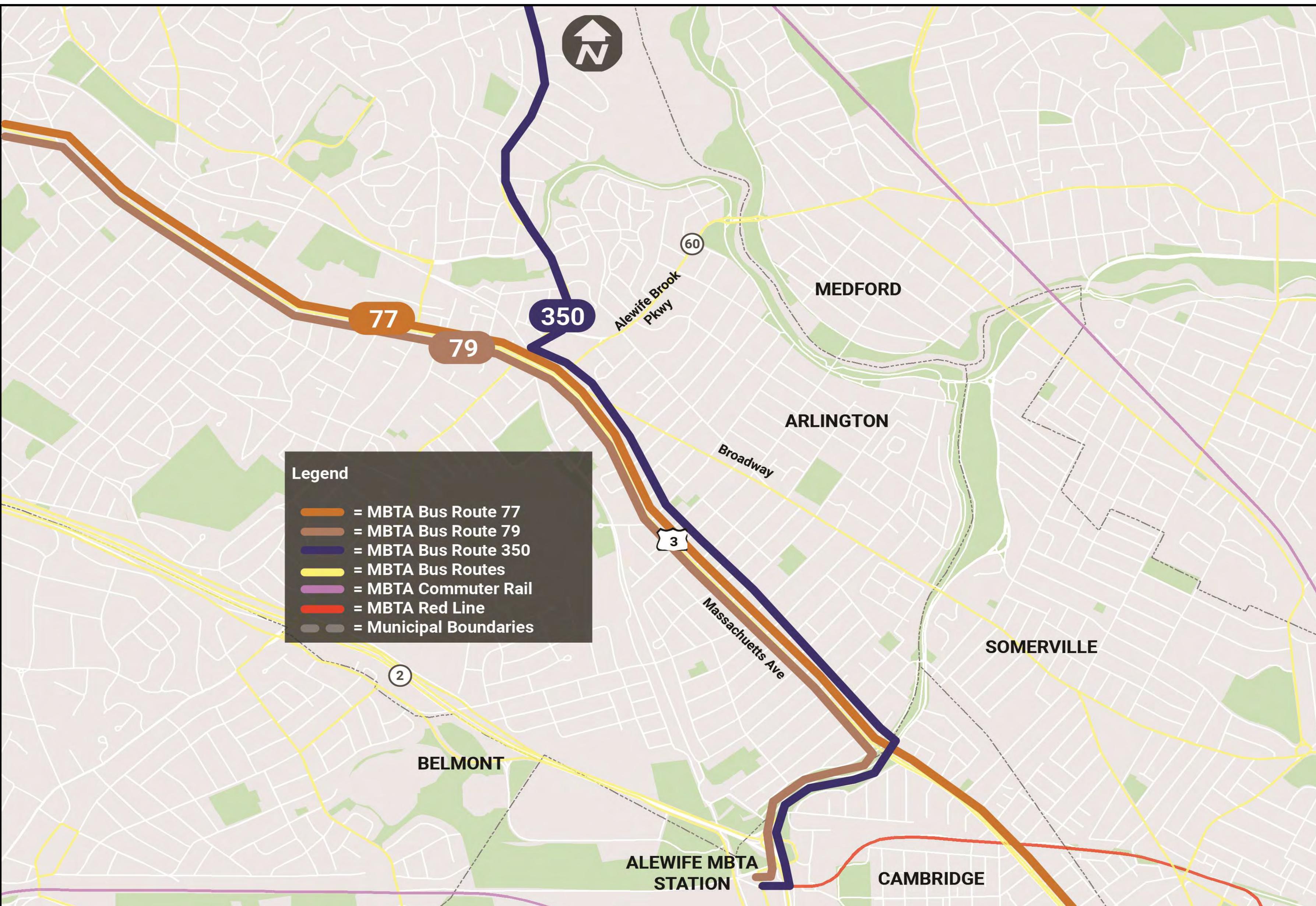
Peak: 20 min
Off-Peak: 60 min

Peak Hour

- 13-14 buses/hr
- Bus every 4-5 minutes

Arlington – MBTA Ridership

Route 77 – Arlington Heights – Harvard Station
Route 79 – Arlington Heights – Alewife Station
Route 350 – North Burlington – Alewife Station



Route 77
7,600+ riders/day

Route 79
1,200+ riders/day

Route 350
1,600+ riders/day

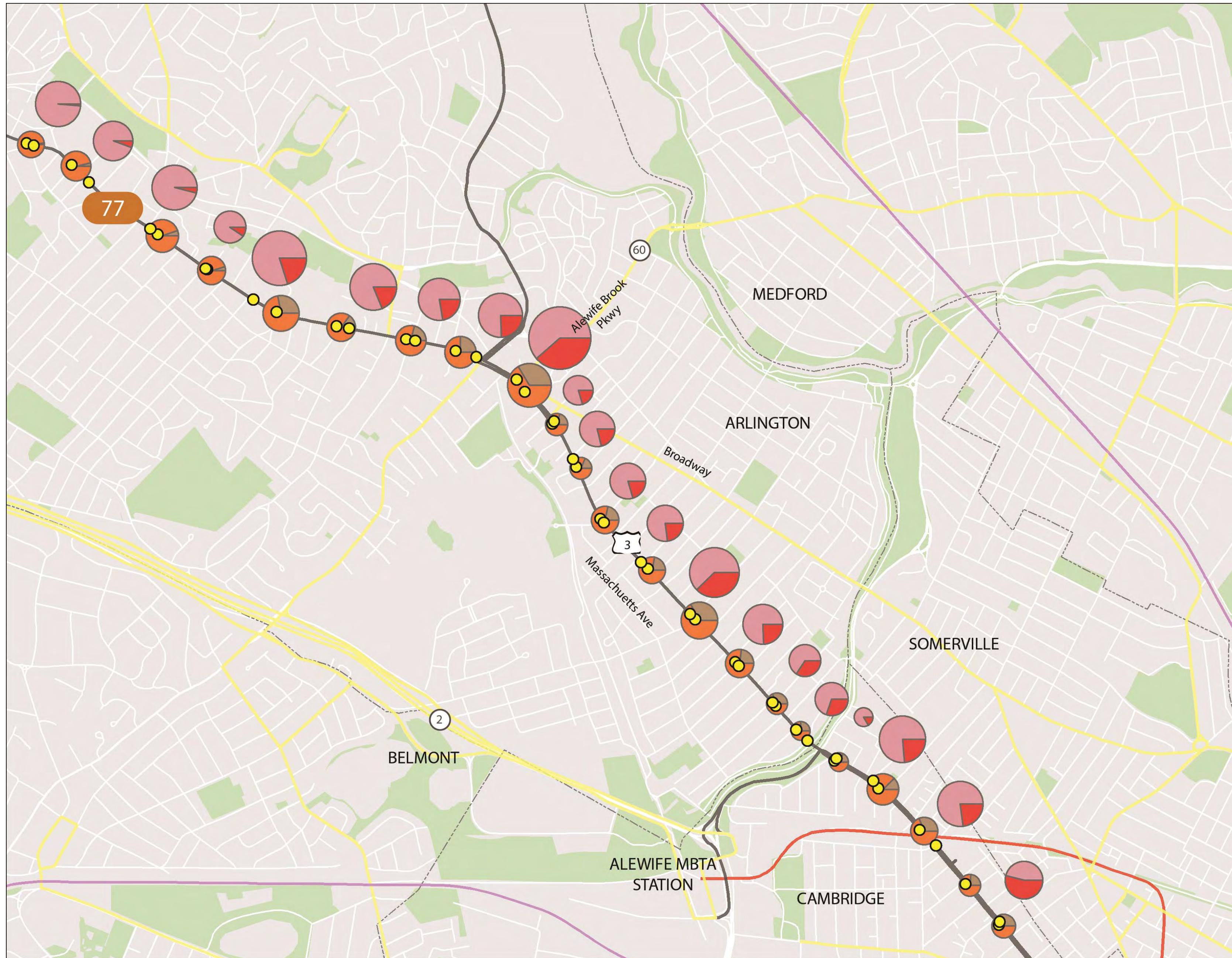
**Over 10,000
riders/day**

Arlington – On Time Performance and Ridership

Average Reliability / On Time Performance

	May 10, 2018	Past 7 Days	Past 30 Days
Route 77	77%	76%	78%
Route 79	60%	65%	72%
Route 350	59%	60%	62%

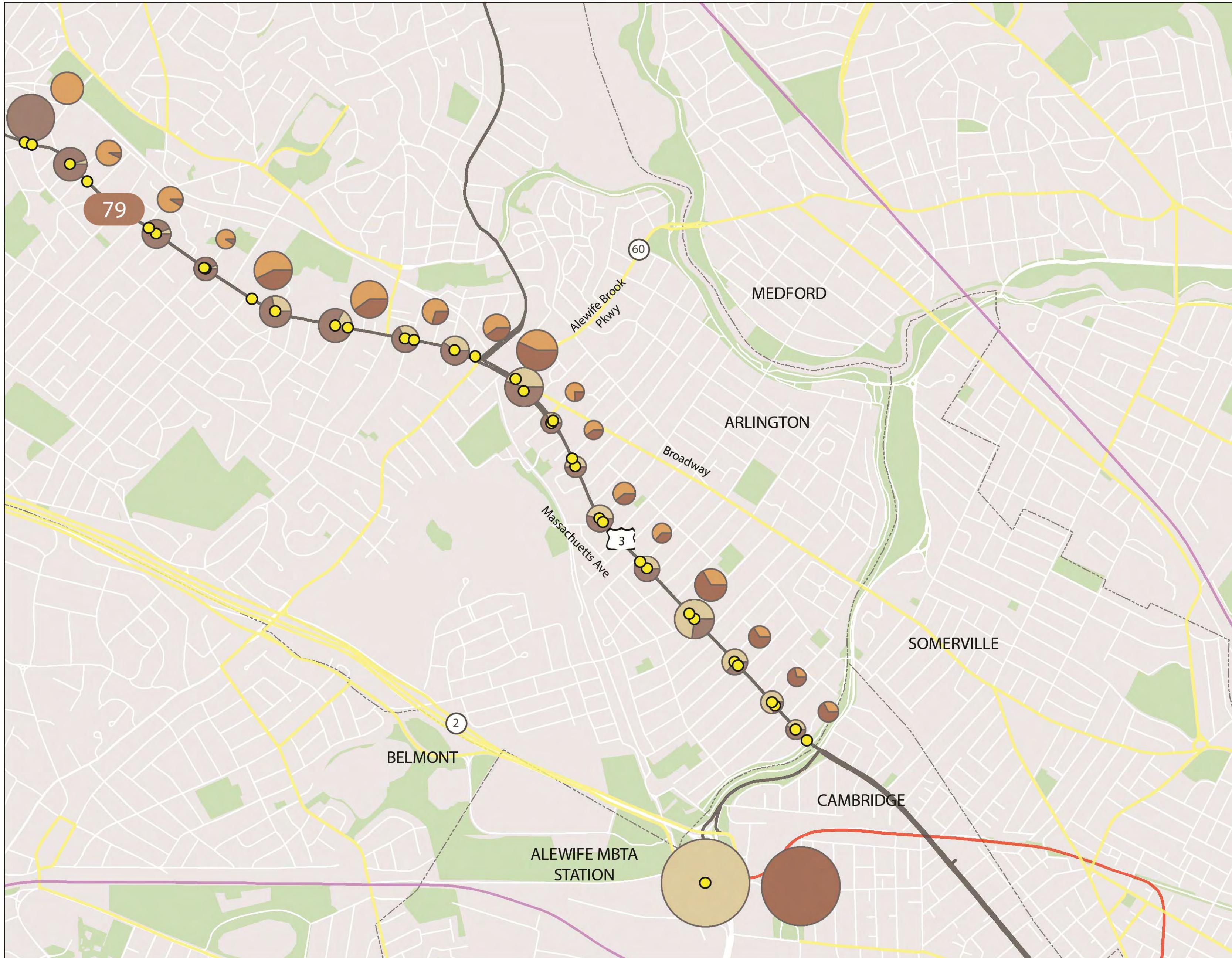
MBTA Weekday Ridership by Stop (Route 77)



Legend

- = MBTA Bus Stops
- MBTA Bus Ridership by Stop (2016)
 - = Inbound Alightings
 - = Inbound Boardings
 - = Outbound Alightings
 - = Outbound Boardings
- = MBTA Bus Route 77
- = MBTA Bus Routes 77, 79, 350
- = MBTA Bus Routes
- = MBTA Commuter Rail
- = MBTA Red Line
- = Municipal Boundaries

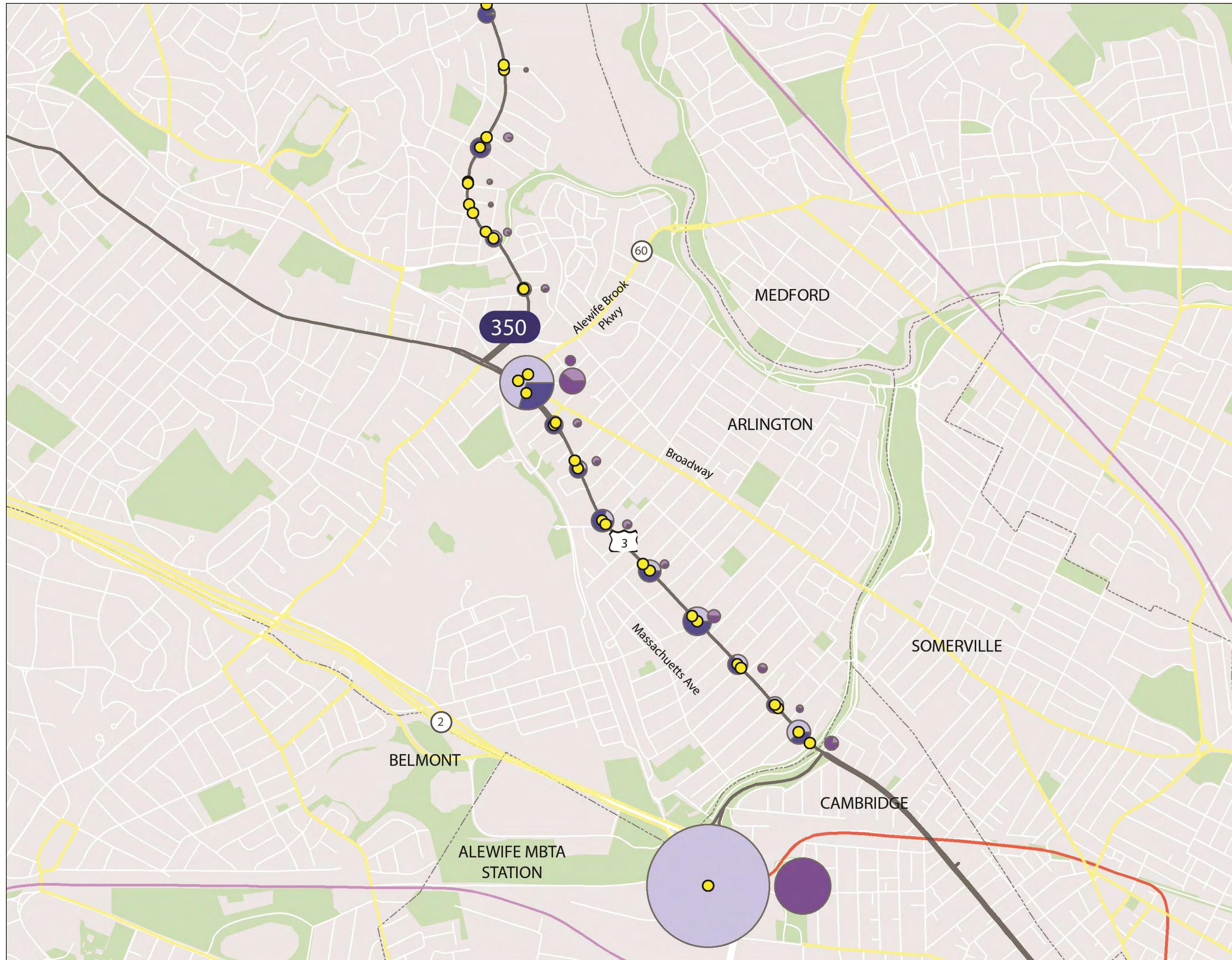
MBTA Weekday Ridership by Stop (Route 79)



Legend

- = MBTA Bus Stops
MBTA Bus Ridership by Stop (2016)
 - = Inbound Alightings
 - = Inbound Boardings
 - = Outbound Alightings
 - = Outbound Boardings
- = MBTA Bus Route 79
- = MBTA Bus Routes 77, 79, 350
- = MBTA Bus Routes
- = MBTA Commuter Rail
- = MBTA Red Line
- = Municipal Boundaries

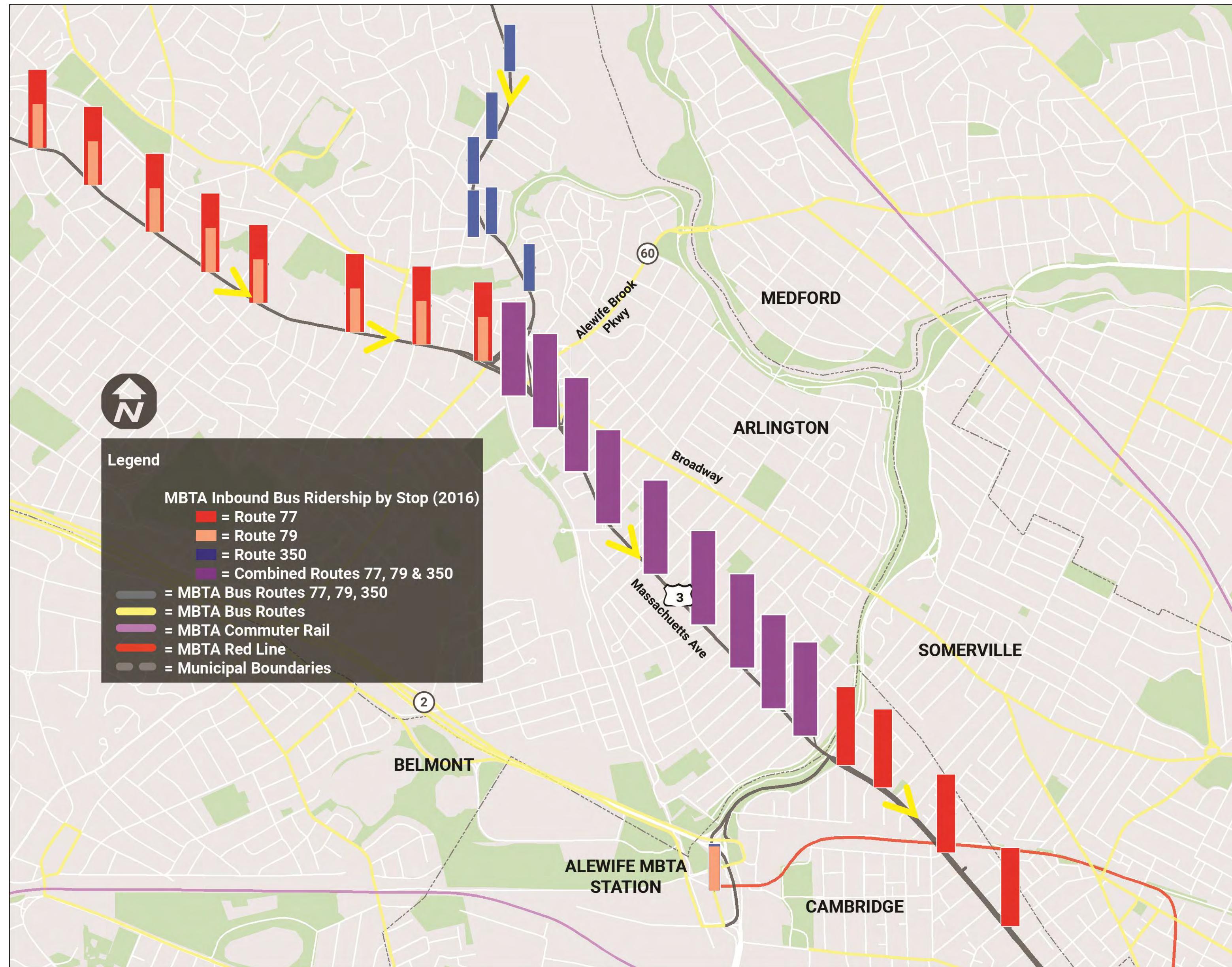
MBTA Weekday Ridership by Stop (Route 350)



Legend

- = MBTA Bus Stops
MBTA Bus Ridership by Stop (2016)
 - = Inbound Alightings
 - = Inbound Boardings
 - = Outbound Alightings
 - = Outbound Boardings
- = MBTA Bus Route 350
- = MBTA Bus Routes 77, 79, 350
- = MBTA Bus Routes
- = MBTA Commuter Rail
- = MBTA Red Line
- = Municipal Boundaries

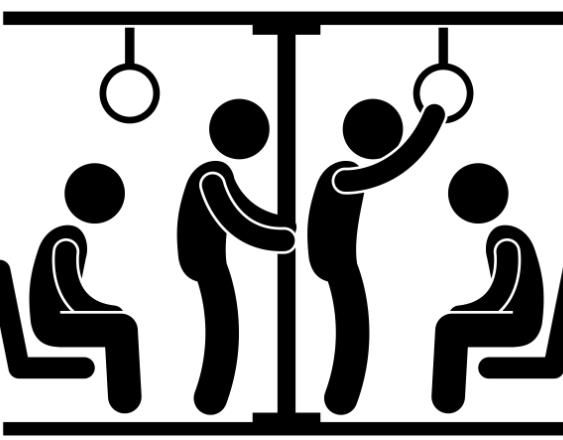
Arlington Load Factor



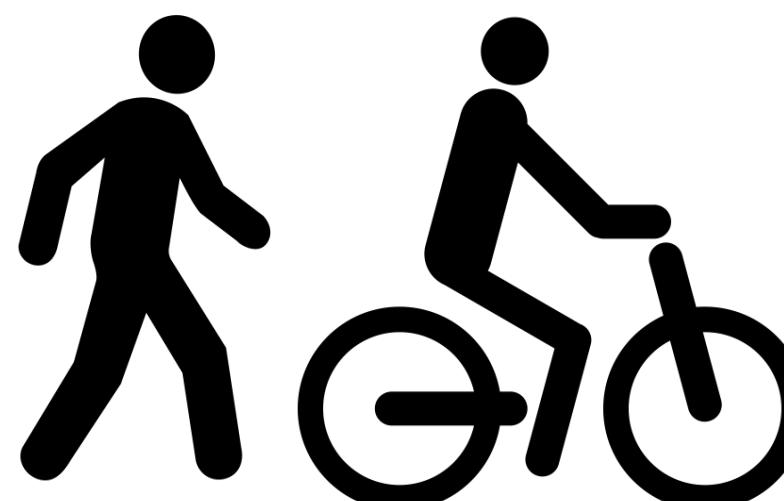
MBTA Routes 77, 79 & 350

Riders

More than **1/2** are
Commuters
but **56%** of Route 77
riders are not



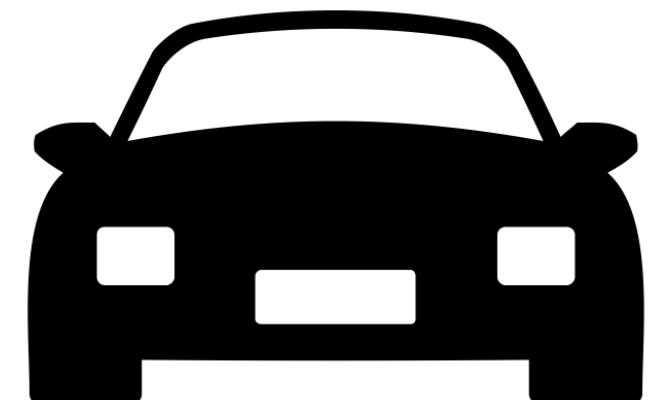
97% of Route 77 & 79 riders
walk or bike to the bus



1/3 of the riders are
Low Income



2/3 of Riders have
access to vehicle



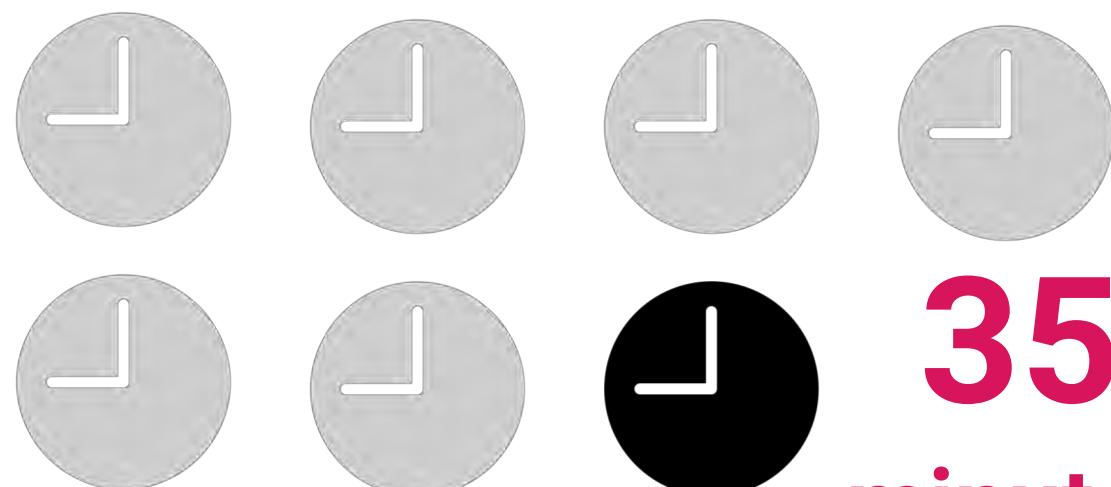
MBTA Routes 77

Massachusetts Ave @ Library Way to
Massachusetts Ave @ Magoun St

Time of the Day

7:00 am – 9:00 am

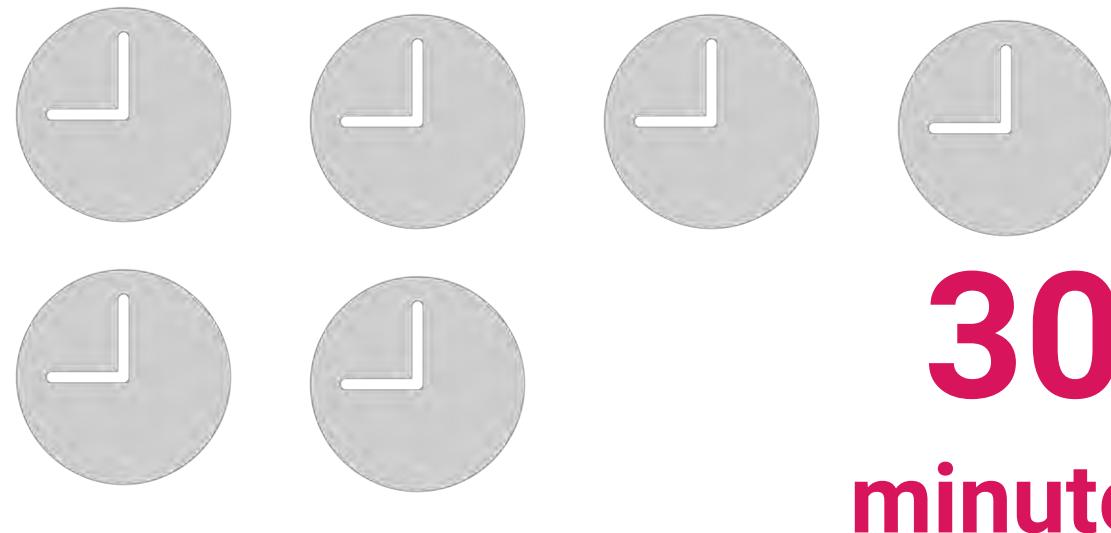
Entire Route



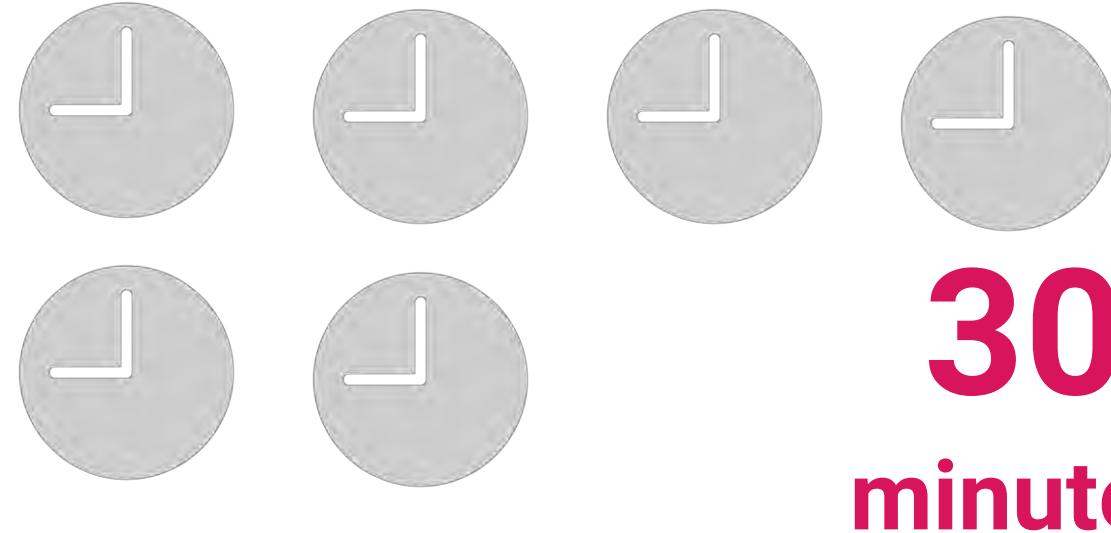
Pilot Area



9:00 am-4:00 pm



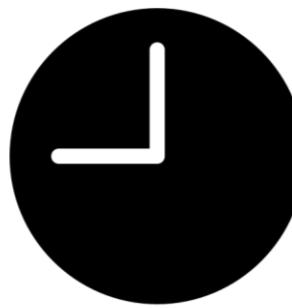
4:00 am-6:00 pm



Travel Time Variance

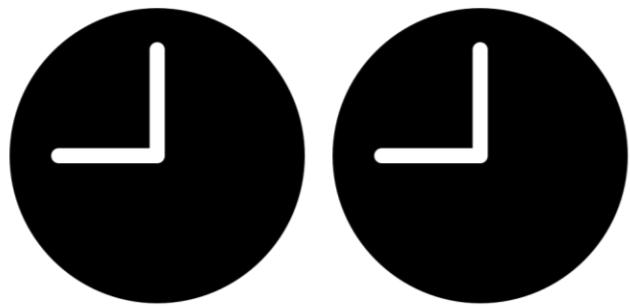
Inbound minutes between scheduled and actual departure times

50th Percentile



3-5 minutes
behind schedule

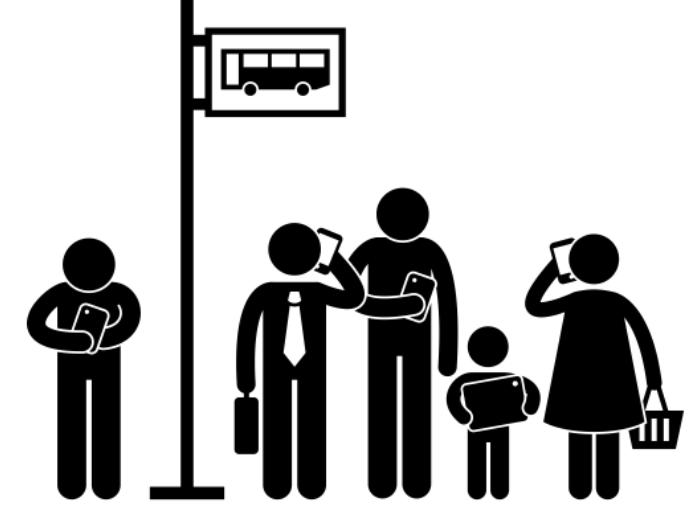
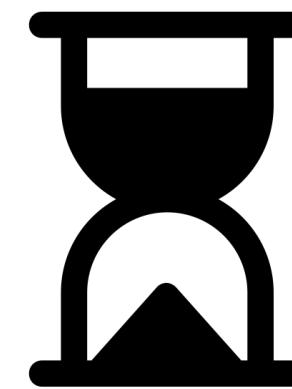
90th Percentile



10-20 minutes
behind schedule

Causes

- **Long Wait Times**
- **Overcrowding**
- **Bus Bunching**

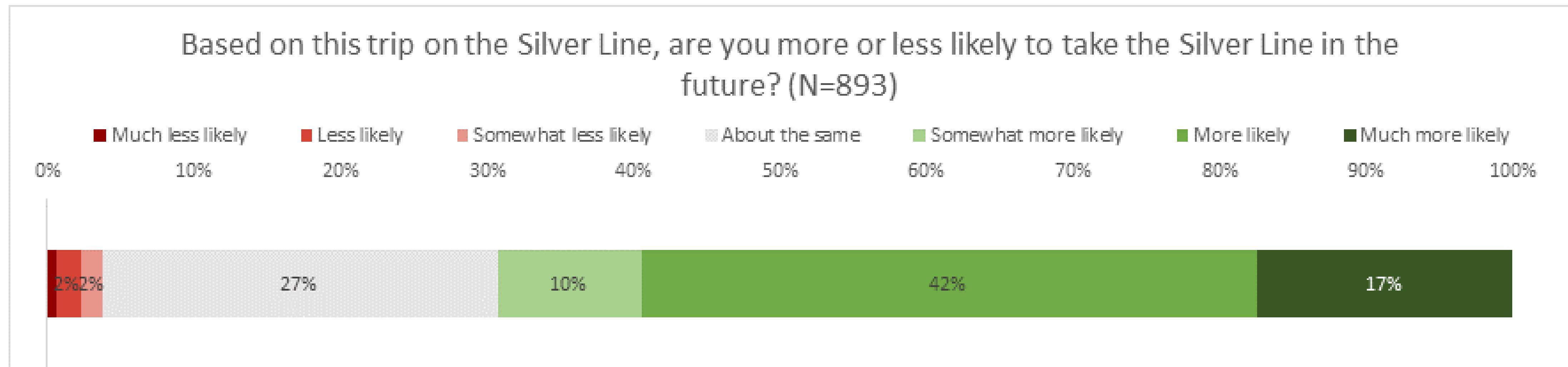


Evaluation Measures: Perception

- **User Satisfaction**

- 65% of respondents report their trip being at least somewhat faster than usual
- 70% of respondents report being at least somewhat more likely to use the Silver Line as a result of this trip

- **Transit Rider Satisfaction**



Evaluation Measures: Perception

- General Perception
 - Social Media
 - Website Click Rates
 - ...by ALL groups



nisenson @nisenson Jun 15
This is SO smart - piloting BRT features + Barr Foundation.

Retweeted **BostonBRT**

#SilverLine pilot aims to show bus rapid
@BayStateBanner #BosBRT

Overview of Transit Signal Priority

Wes Edwards, MBTA

Many modes – Limited Street Space



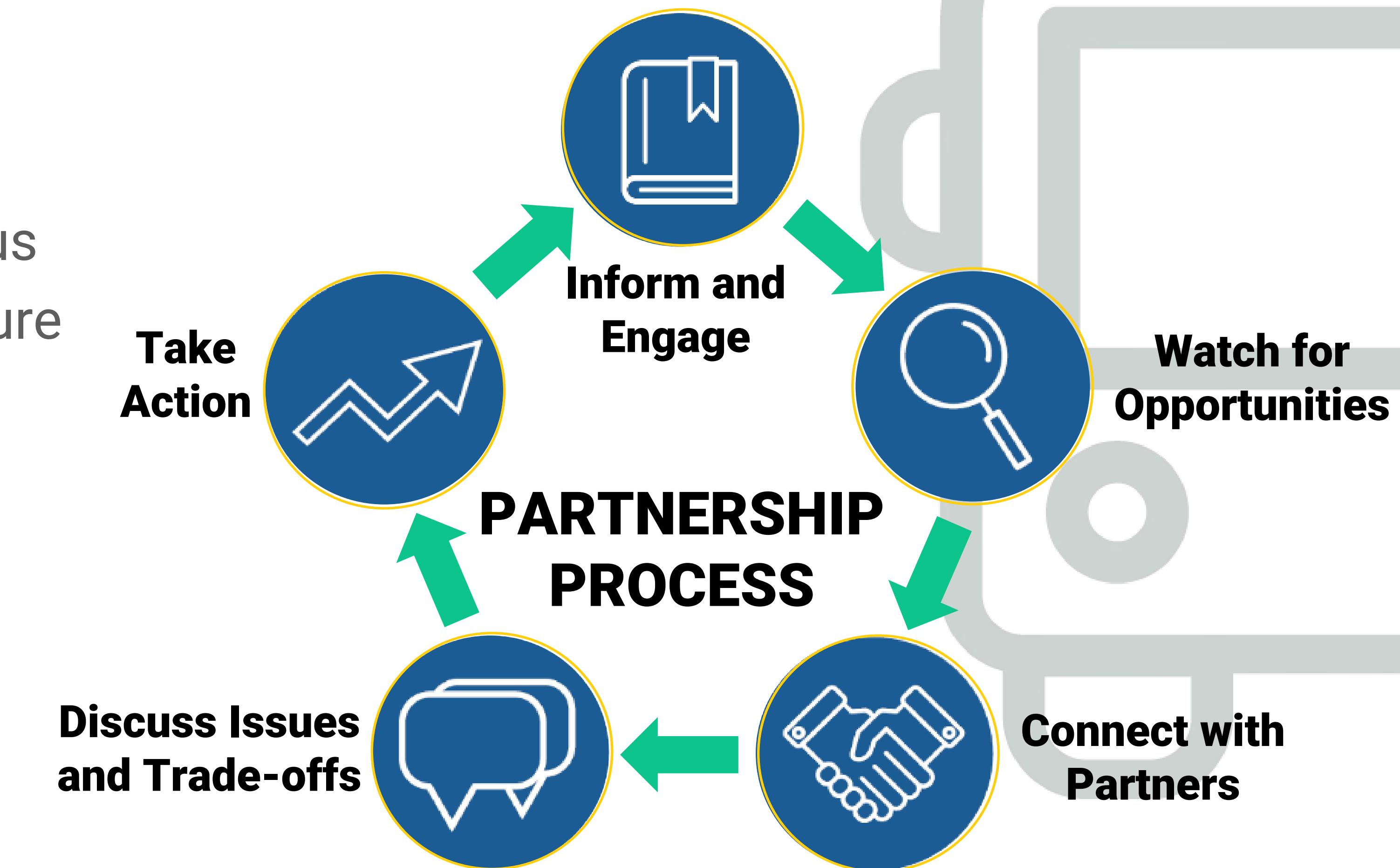
Improving bus service with municipal partnerships

What the MBTA can help with:

Buses, bus stop placement
guidelines and management, bus
schedules, fare payment structure

What municipalities can help with:

Streets, signals, parking, curb
management, sidewalk space,
Intersections, enforcement



Partnership Examples to Improve Bus Speed and Reliability

Bus Operations tools

- Stop Relocation
- Stop Consolidation
- Route Design

Infrastructure tools

- Turn Radius Improvements
- Bus Bulbs
- Roadway Channelization/Signage

Traffic Control tools

- Transit Signal Priority
- Lane Restriction/Exemption
- Queue Jumps

Transit Lane tools

- Curbside bus lane
- Queue bypass (short bus lane)
- Center bus lane



What we consider before making changes

Accessibility	Does it meet ADA and MBTA bus accessibility requirements, increasing access and safety to those riders with limited mobility?
Speed and Reliability	Does it improve speed and reliability of the bus system?
Parking	What is the impact on parking and how do we minimize negative impacts?
Safety	Does it address existing safety concerns or maintain a safe environment?
Customer Comfort	Does it improve the customers experience by providing new amenities or making it more comfortable to use transit?

Transit Signal Priority (TSP)

Reduce time buses stop at traffic signals by:

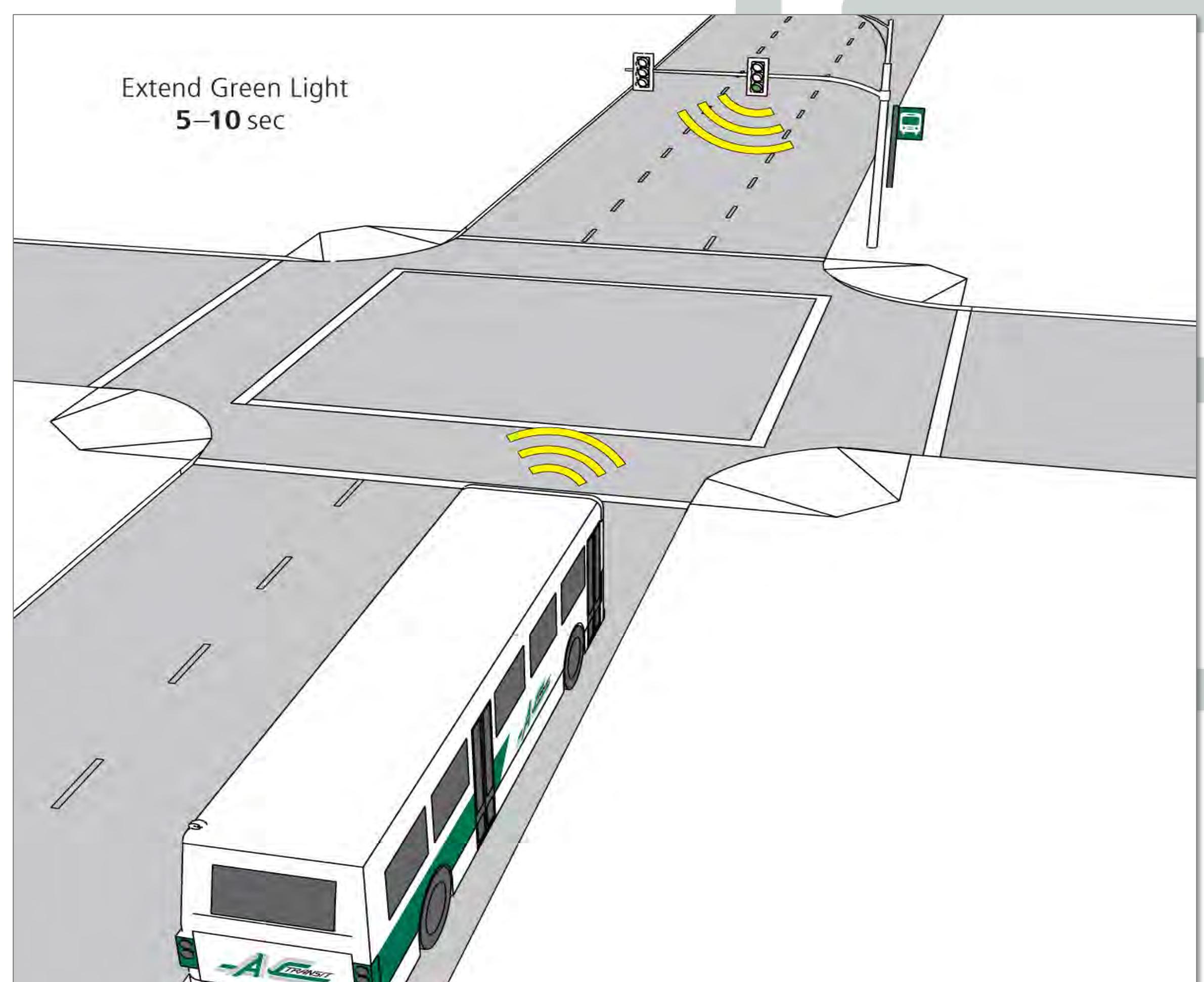
- Extending green signal at end of phase
- Giving green signal early at start of phase

TSP impacts:

- Improve reliability
- Reduce travel time
- Increase capacity

TSP outcomes:

- Better service for current riders
- Attract new riders



TSP Pilot Strategy



Develop TSP software and pilot on individual signals

TSP pilot corridors:

- Beacon Street, Brookline
- Commonwealth Avenue, Boston
- Huntington Avenue, Boston
- Massachusetts Avenue, Cambridge
- Mt. Auburn St., Cambridge/Watertown
- Massachusetts Avenue, Arlington

Roll out to high ridership corridors

Future MBTA TSP Program

- Focus on high-ridership, high-delay corridors
- “Piggyback” on other traffic signal projects to add TSP
- Emphasis on municipalities eager to partner
- Concentrate on candidate corridors for dedicated bus lane



Questions and Answers

Participation Rules

- Assemble at mic for questions
- Please introduce yourself (name and affiliation, if any)
- What questions do you have about the BRT pilot or process?
- Use brevity and respect time
- Express disagreements or concerns respectfully

**Details about the Arlington BRT pilot will be discussed at the next forum.
Please submit specific suggestions about the pilot on a comment card.**





Thank You

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